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ABSTRACT

The guide is intended to provide information to adapted physical education instructors. An initial section introduces characteristics of the following handicapping conditions: autism, diabetes, emotional disturbance, learning disabilities, mental retardation, musculoskeletal disorders, neuromuscular disorders, seizure and convulsive disorders, and sensory impairments. Chapter 2 focuses on programing aspects, with particular attention to formal and informal assessment and development of individualized education programs. Modifications of physical education activities are offered for aquatics, basketball, bowling, field events, floor hockey, gymnastics, soccer, softball, track events, and volleyball. A final chapter describes adaptive equipment that can be made or purchased. (CL)

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EDUCATIONAL RESOURCE GUIDE

FOR

ADAPTED PHYSICAL EDUCATION

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Virginia Polytechnic Institute
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Acknowledgements

The manual represents a compilation of information from the references cited at the end of each chapter. Our aim was to consolidate a vast amount of valuable information that has been published in books, journals, and manuals, and to include often overlooked, unpublished information written by graduate students and people related to the field of special physical education. We are grateful for all of their contributions.

Appreciation is also extended to Phoebe Ann Kennedy, who typed the first draft of the manual, and edited and re-edited each revision. Without her careful eye, we would still be editing the document. Further thanks go to Sue Bowen who entered all of this information into our word processing system and updated each revision.

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INTRODUCTION

The purpose of this educational resource manual is to provide information to those practitioners in the field who instruct handicapped children and youth in adapted physical education. Four major training areas are highlighted:

1) different kinds of handicapping conditions and their defining characteristics,
2) how to program for the handicapped student,
3) how to adapt and modify activities, and
4) how to make or obtain adaptive equipment.

The content in this manual is derived from the Virginia Tech preservice curriculum for adapted physical education teachers, but by no means covers the breadth and depth of knowledge gained in the degree program. It is presented in a straightforward, concise format in order to give the reader the maximum amount of information with the least amount of verbiage. Resources are presented at the end of each chapter to allow the readers the option to learn more about their own areas of interest.

The major goal of the manual is to improve the delivery of services that are currently available to handicapped persons in the public school and community environments. We feel that through increased awareness we can better serve handicapped populations.

Chapter 1

Kinds and Characteristics of Handicapping Conditions

This first chapter focuses on the various handicapping conditions. After a brief definition of each condition, the characteristics associated with that condition are outlined. Explicit descriptions are given where different types of disorders are grouped under a larger umbrella term or where the degree of severity of the condition results in differences in defining characteristics. A bibliography of resources for additional information on this topic is presented at the end of the chapter.

Autism

A behaviorally defined syndrome, autism is a severely incapacitating, usually lifelong disability that often occurs in the first three years of life. The essential features include disturbances of developmental rates and/or sequences, and a profound inability to relate to people, events, and objects.

Specific characteristics of the disability, as grouped according to clusters of related symptoms, are:

1) Disturbances in developmental rate
    a) irregularities in achieving developmental milestones
    b) discontinuities or lags in development
2) Behaviors relating to people, events, and objects

a) pathological need to be alone

b) absence of fear or anxiety with strangers (7 to 9 months of age)

c) lack of playing typical baby games (e.g., peek-a-boo)

d) unusual need for sameness (i.e., resists changes in routines)

e) disinterest in others, seems to look past or "through" others

f) poor or deviant eye contact

g) lack of interest in new learning experiences

3) Behaviors relating to motility

a) hand-flapping

b) marked physical overactivity including lunging and darting movements

c) head banging and body rocking to a great degree

d) preoccupation with spinning objects

e) perseveration (i.e., continuing contact with one activity or object)

4) Behaviors relating to perception and regulation of sensory input

a) underactivity or unresponsiveness (i.e., lack of startle reaction or response to sensory stimulation)

b) over-activity or heightened sensitivity to certain sounds, rough fabric, sensory stimulation, and movement off ground (i.e., travelling in elevators)

c) self-stimulation

d) inappropriate attachment to objects

5) Language behavior

a) muteness, indicates needs through gestures

b) acting as if deaf

c) delayed speech

d) atonal, arrhythmical speech

e) delayed speech

f) "flat" speech, lacking emotion and effect

Diabetes

Diabetes is a metabolic disturbance in which the body exhibits an inability to properly use the starches and sugars it ingests. There are two types of diabetes:

1) Juvenile: The disease is usually developed before age 20. Insulin is almost always required because little or no insulin is being produced.

2) Adult: This condition is developed later in life. Diet therapy and oral hypoglycemic drugs usually regulate the insufficient amounts of insulin.

There are two results of an insulin imbalance:

1) Insulin shock: characterized by too much insulin (i.e., hypoglycemia); unconsciousness and/or convulsions may occur. Sugar intake can prevent this reaction. If the person is already in shock, then an injection of glucagon will be needed.

2) Diabetic coma: characterized by too little insulin (i.e., hyperglycemia), usually caused by any deviation from regular eating, sleeping, or exercise patterns. The person will need to be hospitalized to receive large doses of insulin and intravenous fluids for dehydration. It is possible that the coma can cause irreversible blindness.

Emotional Disturbance

Simply, emotional disturbance is characterized by behavior that differs greatly and chronically over a period of time from current social or cultural norms. Behavior is considered emotionally disturbed based on the rate, duration, topography, and magnitude of its occurrence. Rate refers to how often a particular behavior is performed within a unit of time. Duration is a measure of how long a child engages in a given activity. Topography refers to the physical shape or form of an action. Magnitude refers to the intensity of the behavior.

The characteristics of emotional disturbance are:

1) Emotional disinhibition: frequent displays of explosive behavior, overexcitability, and loss of control;

2) Emotional perseveration: examples include prolonged and repetitious rocking behavior, drawing of same shapes, tapping of pencil, counting blocks;

3) Limited emotional tolerance with interpersonal relationships: the individual often displays a lack of empathy for others' mistakes or actions;

4) Intense reactions: behaviors include prolonged withdrawal or bad mood after reprimand;

5) Behavior often inappropriate to the situation: for example, the individual would frequently emit strange noises at inappropriate times or in inappropriate places;

6) Emotional shallowness: the consistent inability to show joy, fear, distress, happiness, etc., at culturally appropriate times;

7) An inability to learn: which cannot be adequately explained by intellectual, sensory or health factors. That is, after the individual is given a battery of assessments relevant to the observed disability, no explanation or reason for the disability is diagnosed.

8) Difficulty with body image: occurs when an individual has a distorted view of reality or misperception of capabilities of his/her own body in relation to task; for example, an individual might believe that he/she is able to leap over a six foot fence when he or she is five feet tall.

9) Difficulty with spatial relations: individual misperceives own body space in relation to objects; for example, individual frequently bumps into walls.

10) A tendency to develop physical symptoms or fears: associated with personal or school problems; for instance, school phobia - individual frequently complains of nausea, headaches, stomach aches each morning before leaving home for school.

Learning Disabilities

A learning disability is a disorder of one or more of the basic psychological processes involved in understanding or in using spoken or written language. This disorder affects the individual's understanding or acquisition of listening, speaking, reading, writing, reasoning, or mathematical abilities. Included under this umbrella term are such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, discalculia, and developmental aphasia. Individuals who exhibit other handicapping conditions (e.g., mental retardation) or

cultural or economic disadvantages are not included in this category. Presently, the cause of learning disabilities is not known. Causes proposed by the research to date generally fall into three categories--brain damage, biochemical imbalance, and environmental factors.

Ten characteristics of the learning disabled that are most recognizable are:

1) Hyperactivity: the inability to sit or stand quietly. These individuals seem to be constantly touching, bending, pulling, or twisting objects in the environment.

2) Perceptual-motor impairments: a wide range of symptoms which include nonspecific awkwardness or clumsiness, problems of laterality or directionality, general inadequate functioning of perceptual motor skills, poorly developed body awareness and kinesthesis, and fine motor incoordination.

3) Emotional liability: obvious displays of moodiness or anxiety, frequently observed mood swings--"ups and downs".

4) General coordination deficits: gross motor incoordination.

5) Disorders of attention distractibility: or the inability to concentrate attention on any particular object or person. That is, the individual may completely forget task at hand if disturbed by any movement, sound, or smell.

Also, the individual may persevere or be unable to easily shift from one activity to another.

6) Impulsiveness: acting upon impulse without preplanning or consideration of the consequences.

7) Disorders of memory and thinking: difficulty in remembering or recalling information.

8) Specific academic problems in reading, writing, spelling, and/or arithmetic. That is, the individual may display an ability to read, yet do well in mathematics, or read well but spell poorly.

9) Disorders of speech and hearing - specifically in comprehending, remembering, or expressing language, or in using appropriate grammar and vocabulary.

10) Equivocal or "soft" neurological signs: neurological indications that a problem may exist since some aspects of the brain's functioning are not within normal limits, usually revealed through an electroencephalograph (EEG) in which the brain wave patterns are found to be difficult to explain or interpret.

There must be a significant and specific achievement deficiency in the presence of overall adequate intelligence, as a learning disability is not attributed to other handicapping conditions. As such, the above characteristics without achievement deficits do not constitute a learning disability.

Mental Retardation

As defined by the American Association on Mental Deficiency (AAMD) in 1973, mental retardation refers to "significantly subaverage general intellectual functioning existing concurrently with defects in adaptive behavior, and manifested during the developmental period." More specifically, an individual would be considered mentally retarded, if the following three criteria were met:

1) the individual scored more than two standard deviations below the mean of an individually administered IQ test;

2) the individual does not meet the standards of personal independence and social responsibility expected for his/her age and cultural group; and,

3) the individual exhibited this behavior between birth and 18 years of age.

Mental retardation can be caused by any one, or a number of conditions that hinder or interfere with development before birth, during birth, or in the early childhood years. The AAMD has grouped these causes into the following categories:

1) Environmental influences - results from neglect, sensory deprivation, or other adverse environmental conditions;

2) Chromosomal abnormality - includes all deviations of the normal chromosomal structure; the most common is Down Syndrome;

3) Unknown prenatal influence - no definitive cause has been identified. This category includes cerebral malformation, craniofacial anomalies, and hydrocephalus (accumulation of fluid in the cranium causing enlargement of the head).

4) Gestational disorders - those in which the period of pregnancy or gestation was abnormal. This includes problems related to low birth weight, premature birth, and late birth.

5) Trauma and physical agents - injuries to the brain before, during, or after birth; includes mechanical injuries at birth or prolonged anoxia (lack of oxygen).

6) Infection and intoxication - includes prenatal and maternal infections during pregnancy (e.g., rubella, syphilis), postnatal cerebral infections (e.g., meningitis), and cerebral damage due to toxins (e.g., drugs, poisons, blood disease in mother).

7) Metabolism or nutrition - includes metabolic, nutritional, endocrine, and mineral dysfunctions such as Tay Sachs disease, Hurler's disease, and Phenylketonuria (PKU).

8) Gross brain disease - postnatal mental retardation resulting from tumors and hereditary conditions which

include a combination of lesions of the skin and nervous system. Specific diseases include neurofibromatosis, tuberous sclerosis, and von Recklinghausen's disease.

9) Following psychiatric disorder - retardation following psychosis or other psychiatric disorder with no evidence of cerebral pathology.

10) Other conditions - include unknown etiologies in which there is no evidence of physical cause or structural defect, no family history of subnormal functioning, and no associated psychosocial factors.

Mental retardation is a complex condition that ranges along a continuum from mild to profound. As such, the characteristics in the following list must be considered in terms of the severity of the disability.

1) Increased anxiety - for instance, becomes extremely nervous when attempting new skills or using new equipment.

2) Increased frustration and aggression - frequently the result of few outlets in which frustrations can be released or the inability to adequately communicate needs; for example, an individual might stubbornly refuse to continue to play a new game if the rules are not clear and she or he is often called "out".

3) Failure expectancy - lack of willingness to attempt new tasks or impassive reaction to failure when it does occur.

4) Low self-concept - exhibits a negative self-image, little self-confidence; related to first three characteristics.

5) Reduced ability to learn - inefficient learners who learn at a slower rate and at a lower level than what is usually attained by a person of average intellect; for example, less alert to relevant cues in the environment that are needed to solve problems, failure to use what was previously learned while performing tasks.

6) Language difficulties - lacks ability to ask relevant questions or describe specific needs; for example: articulation problems, voice disorders, stuttering.

7) Delayed social development - inappropriate social behavior often due to lack of interaction or separation from normal social situations (e.g., play, conversations); delayed behavior may resemble childish displays of shyness, aggression, or frustration.

8) Delayed physical and motor development - deficient in varying degrees in performing a number of motor tasks which include those that require strength, balance, flexibility, precision, and finger dexterity; specific characteristics include awkward movement, flat-footed, slow reaction time, easily fatigued, poor balance.

The four main classification systems of retardation and typical developmental milestones are:

1) Mild or educable (WISC-R IQ = 69-55) - the basics of academic subjects can be taught and are mastered up to about sixth grade; social and communication skills develop to be age appropriate; gainful employment can be sought; many are not recognized as retarded beyond school.

2) Moderate or trainable (WISC-R-IQ = 54-40) - education concentration is on self-care, communication, social skills, and vocational skills; most who work are in sheltered workshops; many live in supervised group homes as adults.

3) Severe (WISC-R IQ = 39-26) - training consists of elementary health habits and language development; some can learn minimal vocational skills and contribute to the community. Most reside in a supervised environment.

4) Profound (WISC-R IQ < 25) - some motor development present, but cannot profit from training in self-care (i.e., custodial); most need complete care and supervision throughout life, may be confined to bed or a wheelchair; often placed in residential facilities.

Musculoskeletal Disorders

Musculoskeletal disorders include a wide range of disabilities that prevent the effective performance of motor movement. These disorders involve bone joints and associated structures, without neurological impairment. Problems from these disorders may be congenital or acquired

after birth. The specific disorders that are included in this category are:

1. Muscular dystrophy (MD). MD is a group of progressive degenerative diseases of the skeletal muscles where muscular atrophy and weakness occur. There are three types of muscular dystrophy:

a. Duchenne: a sex linked disease, carried by the mother, passed to the son, accounts for 65% of the cases of MD. Usually appearing before three years of age, the degeneration of the muscles begins with the hip girdle and thigh muscles, then affects the shoulder muscles. The affected male is usually wheelchair bound by his teen years, with death often occurring by the age of twenty-five. Characteristics of the disease are:

(1) decreased physical activity with age,
(2) waddling gait with legs spread apart,
(3) Gower's sign (i.e., "walking up" thighs with hands to raise self from floor),
(4) toe walking,
(5) lordosis (sway or hollow back),
(6) gradual weakening of abdominal and neck muscles,
(7) muscle imbalance,
(8) gradual weakening of lower extremities.

b. Facio-scapulo-humeral: transmitted as an autosomal dominant trait, this disease occurs more often in adolescent females than males. It primarily affects the face, scapula and upper arm muscles. Back and pelvic muscles may also weaken. Typical characteristics include forward sloping shoulders, winged scapula (i.e., winged projection of shoulder blades), lordosis, difficulty in raising the arms above the head, and limited facial mobility.

c. Limb-girdle: occurring in both male and female during the adolescent and post-adolescent years, this disease is caused by an autosomal recessive gene that must be present in both parents. While not affecting the facial muscles, this disorder has many of the same characteristics as facio-scapulo-humeral MD. The characteristic behaviors include a waddling gait and lordosis.

2. Spina bifida. This congenital disorder occurs when there is an incomplete development of one or more vertebrae, leaving an opening in the spinal column. The severity of the condition depends upon the nature of the nerve damage and the location of the defect. The different forms of spina bifida include:

a. Occulta: the mild forms of this defect may be hidden or go undetected, marked only by a dimple, mole, or tuft of hair. Specific characteristics may include slight

deviations in posture and muscle tone which surface as mild deformities of the hips, legs, and feet.

b. Cystica: obvious at birth, these forms of spina bifida are evidenced by a protruding or sac-like tumor or cyst. The two types are:

(1) meningocele: an uncommon and relatively mild form, distinguished by sac protrusion along the backbone. The sac contains only cerebrospinal fluid, thus the spinal cord and nerve roots are in place. The sac is generally removed shortly after birth, and rarely results in neurological impairments or mental retardation.

(2) myelomeningocele: the most common and severe form of spina bifida. The tumor or cyst contains meninges (coverings of the spinal cord, portions of the spinal cord), cerebrospinal fluid and nerve fibers. While surgery repairs the visible defect, paralysis of the lower extremities, hydrocephalus, and mental retardation almost always are present. The individual typically has poor bladder and bowel control and must use an external, artificial drainage system (e.g., catheter). Ambulation is facilitated by the use of braces, crutches, or wheelchair.

3. Arthritis. A disease or disorder of the joints, arthritis affects over 35 million people in America, 250,000 of whom are children. The disease ranges from relatively mild inflammation of the small joints in the hands and feet to extreme debilitation resulting in forms of atrophy and joint deformity. Two types of arthritis are:

a. Rheumatoid: an inflammatory disorder of the connective tissue within the joint. The most common form of the disease usually affects fingers, knees, elbows, feet, shoulders, and hips. Typically, the joints are stiff, then become swollen and the muscles atrophy. Severe forms may result in joint deformity and dislocation.

b. Osteoarthritis: a degeneration of the joint cartilage, usually in the weight-bearing joints (i.e., lower limbs and spinal column). Joints become painful and stiff, resulting in limitations of movement and deformity.

4. Limb Deficiencies: Ranging from a slightly deformed toe to the absence of a limb, these disorders may be congenital or acquired after birth. Specific limb deficiencies include:

a. Clubfoot (Talipes) - a common foot deformity is usually present at birth, but may develop later due to spastic paralysis, found in disorders such as cerebral palsy. While the specific cause of congenital clubfoot is not yet known, some hypothesize that defective cells, muscle

imbalance, and position in utero may incur the disorder. There are many types of clubfoot, each of which is characterized by the direction of the deformity. Three of those types include:

(1) equinovarius - the most severe form. The foot is twisted inward and downward, the heel cord is often very tight.

(2) culcaneus valgus - the most common form; the foot is sharply angled at the heel, the foot points up and out.

(3) metatarsus varus - the mildest form; the front part of the foot is turned inward, crippling is very rare.

b. Congenital anomalies: characterized by complete or partial absence of a bone, or bone malformation at birth. Upper extremity defects frequently involve both limbs. Lower extremity defects usually occur in only one limb. Partial absence of long bones is more frequent than total absence. Drugs, such as thalidomide, taken by the mother during pregnancy, have been found to be a cause of these impairments.

c. Amputation: the removal of a limb or part of a limb. Amputation is typically done surgically, as required with certain diseases, tumors, and accidents, or through a traumatic accident.

5. Spinal Cord Injury. A traumatic insult to the spinal cord; this disability usually arises from accidents or injuries. Generally there is paralysis and a loss of sensation below the level or location of the injury. Two degrees of injury are:

a. Quadriplegic (4-limb involvement): individuals will have lost use of arms and legs. Other complications include possible severe breathing problems, and lack of bladder and bowel control. Motorized wheelchairs are usually employed to facilitate movement.

b. Paraplegic (lower limb involvement): individuals will have lost the use of the lower limbs, which is usually accompanied by a loss of bladder and bowel control. These individuals can use self-propelled wheelchairs for ambulation.

Neuro-Muscular Disorders

Neuro-muscular disorders result from some form of neurological disease or dysfunction which affects muscular control and the execution of simple and/or complex movement. These disorders include:

1) Cerebral Palsy (CP): a complex malfunction in the brain which results in paralysis or motion impairment of the limbs. CP is characterized by a group of symptoms that are static; that is, the condition does not improve or worsen over time. Also, it is not fatal nor is it inherited. In

general, CP is caused by injuries, accidents, or illnesses occurring before, during, or soon after birth. Types of CP are determined according to neuromuscular activity.

a) Spasticity: a normal inhibition of muscles is absent. Muscles are tense and contracted, movements may be jerky, exaggerated, and poorly coordinated. If the individual walks, a "scissors gait" is observed (i.e., standing on toes with knees bent and pointing inward). Individuals display poor support and balance resulting from lower limb contractions.

b) Athetosis: inappropriate degree of muscular inhibition. Muscles may be tense and rigid, or loose and flaccid. Movement is large, exaggerated, twisted, and uncontrolled, resulting in constant changes in body position. However, this abnormal motion is not evident when the individual is relaxed or asleep. Typical characteristics of individuals with CP may include uncontrolled facial gestures (e.g., grimaces, extension of the tongue), drooling, walking with lurching movements, and stumbling.

c) Ataxia: lack of sufficient contractile impulses before the muscle inhibitors begin to act. The individual may appear to be dizzy while walking as there is a poor sense of balance and body position. Movement tends to be jumpy and unsteady, characterized by exaggerated

motion patterns. These individuals appear to be trying to constantly stabilize their bodies in an upright position.

d) Rigidity: in this very rare type of CP, muscles have minimal elasticity. Individuals show extreme stiffness in the affected limbs. That is, they may be fixed and immobile for long periods of time (i.e., "lead-pipe" syndrome).

e) Tremor: another extremely rare form of CP. This type is marked by rhythmic, uncontrolled, yet very strong movements. The tremors are usually noticeable only when limb movement is attempted, and may actually increase when control is attempted.

f) Mixed: combined symptoms of different types of CP. Spasticity and athetosis are the most common combination.

2) Sclerosis: various diseases in which the myelin or covering of the nerve fibers disintegrates. The most common form of the disease is multiple sclerosis (MS), which typically attacks more females than males during their 20's and early 30's. In MS, after the demyelination of the nervous system, tumors or hardened patches of scar tissue appear. These patches interfere with nerve function causing double vision, unusual weakness or numbness, slurred speech, stiff gait, and tremors. Remissions and relapses are common. But as the disease progresses, limited movement and possible paralysis occur.

3) Head Injury: usually sustained through automobile or industrial accidents. Different situations may result which, in turn, may cause a range of structural or functional damage to the brain. More frequently occurring head injuries include:

a) Concussion - a severe blow to the head which may result in a widespread paralysis of brain function.

b) Cerebral contusion - generalized disturbance of the brain characterized by the presence of large amounts of blood and hemorrhaging capillaries.

c) Cerebral laceration - a tearing of the brain tissue.

d) Cerebral compression - intracranial hemorrhage, almost always fatal.

Seizure and Convulsive Disorders

Disorders that are characterized by seizures and convulsions generally come under the condition or phenomenon of epilepsy. Epilepsy is the result of an electrical chemical imbalance of the brain's activity, producing a series of sudden, uncontrollable muscle contractions and loss of consciousness. While some cases of epilepsy can be attributed to a fall, a tumor, or a disease that caused a very high fever, in the majority of cases (i.e., about 70%) the cause is unknown. There are four major types of epileptic seizures:

1) Grand Mal: the most evident and serious seizure. Consciousness is lost immediately or right after the onset of the attack. At times, the individual may be aware that he/she is about to have a seizure (e.g., sick feeling, unpleasant taste or odor, flushed face). At first, the muscles are very stiff. After a few seconds there is a violent shaking of the entire body. The tongue may be bitten, saliva may be forced out of the mouth, and incontinence may occur. After the seizure, the individual exhibits a general sense of confusion and headache symptoms. Due to the extreme intensity of the seizure, the individual will be exhausted and may sleep up to 24 hours. This type of seizure may occur anywhere from several times a day to only once a year.

2) Petit Mal: a much less severe seizure, but may occur on a more frequent basis. The individual may appear to be daydreaming. There may be observed dizziness or trance-like actions, as the individual loses consciousness for approximately 5 to 15 seconds. As many as 100 petit mal seizures may occur per day. The individual may not even realize the seizures have occurred as recovery is immediate.

3) Psychomotor: affecting a small number of epileptics, this seizure type appears as a brief period of irrational or inappropriate behavior (e.g., lip smacking, aimless walking, shouting). This type of seizure usually

lasts for only a few minutes, but may continue for several hours. The individual appears conscious but is unaware of the behavior.

4) Focal: also known as jacksonian, this seizure begins on one side of the body, usually an arm or leg, and moves to other parts of the body; however, it may not affect the entire body. While a focal seizure resembles a grand mal seizure, the individual does not go through the initial "stiff" phase. Consciousness is altered but not lost, as the individual may still recognize the surroundings, yet not be able to speak or respond to others.

Sensory Impairments

Sensory impairments are characterized by the complete or partial loss of one or more than one of the senses. Two of the senses, hearing and sight, are discussed here in terms of the types of disorders specific to each sense.

Hearing impairments. There are two general levels of hearing impairments:

1) Deafness: a deficiency which prevents a person from receiving sound stimuli in all or most of their forms. While other sounds may be perceived, speech is not understood.

2) Hard of hearing: a significant hearing loss which requires special adaptations. The individual can usually develop an understanding of speech through the use of a hearing aid.

Types of hearing impairments include:

1) Conductive: results from obstructions or interference in the transmission of sound from outer or middle ear to the inner ear. This disorder may be due to congenital blockage of the auditory canal or a total absence of the passageway. Usually conductive loss can be corrected through surgical or medical treatment. Common causes of conductive hearing loss include:

a) Otitis media: a middle ear infection; the most common cause of conductive impairment. It can be treated with antibiotics, however, if not treated, otitis media can cause permanent hearing loss.

b) Otosclerosis: the hard bone of the inner ear turns to a spongy substance. At the onset it affects the middle ear, but eventually moves into the inner ear.

2) Sensorineural: results from damage to the auditory nerve or the inner ear. Sound may not be delivered to the brain or it may be highly distorted. Generally, this type of hearing loss cannot be corrected by surgery or medication. Two types of sensorineural hearing impairment are:

a) congenital: present at birth, may be due to heredity, maternal rubella, prematurity, or blood incompatibility.

b) adventitious: acquired later in life, may be due to meningitis, heredity, trauma, or accident.

3) Mixed: includes both conductive and sensorineural impairments. Because a mixed impairment is due to problems with processing and conducting sounds, diagnosis is very difficult. Treatment programs must be designed for both types of impairments.

Visual impairments. There are two general levels of visual impairment.

1) Blind: totally without sight or so little vision that the individual relies primarily on other senses. Two determinants of legal blindness are:

a) Visual acuity is 20/200 or less in the better eye after correction.

b) Visual field is restricted to an area of 20 degrees or less.

2) Low vision: usable vision with correction. Visual efficiency (how well an individual can use available vision) becomes the critical determinant of severity of disability. Several conditions result in visual impairments. They include:

a) Reduced ocular motility: impairment of the eye's ability to move results in difficulty with binocular vision (i.e., getting both eyes to look at the same object at the same time, allowing an individual to perceive a

single image). Specific examples of this dysfunction include strabismus (the inward or outward deviation of one or both eyes resulting in a "cross-eyed" or "wall-eyed" appearance) and amblyopia (the reduction or loss of vision in the weaker eye due to lack of training and experience).

b) Nystagmus: the rapid, involuntary back-and-forth movement of the eyes. This condition also results in the inability to focus on objects or symbols.

c) Photophobia: a heightened sensitivity to light. Individuals must wear tinted glasses and avoid strong light or glare. This condition almost always occurs in people with albinism (i.e., lack of normal pigmentation).

d) Refractive errors: this set of conditions includes myopia (nearsightedness), hyperopia (farsightedness), and astigmatism (distorted vision due to irregularities in the cornea or other eye surfaces). Glasses and contact lenses are used to change the course of light rays entering the eye, thus reducing the effect of the impairment.

e) Cataracts: a cloudiness in the lens of the eye, blocking the light necessary for clear vision. Surgery is conducted to remove the lens, which is then replaced with special post-cataract glasses or contact lenses.

f) Glaucoma: marked by abnormally high pressure within the eye. The various types of glaucoma are related

to the specific disturbance or blockage of the eye fluids. If detected in its early stages, medication or surgery is usually used to successfully treat this painful, and sometimes blinding, disorder.

g) Retinitis pigmentosa: an inherited disease that causes a gradual degeneration of the retina. An untreatable disease, retinitis pigmentosa begins with difficulty in seeing at night, followed by a gradual loss of peripheral vision. The individual may retain a small amount of central vision.

h) Macular degeneration: a common condition in which the macular or central area of the retina deteriorates. The individual retains peripheral vision, but loses central vision.

i) Retrolental fibroplasia (RLF): affects premature infants who are placed in incubators and given massive doses of oxygen to survive. The changes in oxygen levels result in dense growth of blood vessels and scar tissue in the eye, which often leads to retinal detachment and total blindness. While occurring in thousands of children during the 1940's and 1950's, this condition rarely is seen in recent years due to the more careful administration of oxygen to premature infants.

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Chapter 2

Programming for the Handicapped

In order for an adapted physical education program to meet the needs of students of a wide range of capabilities, an organized, thoughtful and individualized program for each student must be developed. In accordance with the Education for All Handicapped Children Act (Public Law 94-142), an individualized education program (IEP) is mandated for all students who have been identified as having a handicapping condition. The purpose of this chapter is to outline the components of an IEP that relate directly to adapted physical education. First, as the initial step in the IEP development process is to establish the student's present level of performance, the process of assessment is discussed and a number of formal and informal assessments are described. General information on setting up an adapted physical education program is then offered along with suggestions related to specific disabilities. Then, in the attempt to pull all of this information together, the construction of a sample IEP is illustrated. Finally, a list of references on the topic of assessment and program development is given.

Assessment

Besides deciding the eligibility of individuals to receive special educational services, assessment enables the

educator to pinpoint an individual's strengths and weaknesses. From the information, a more precise educational program for the individual can be constructed. There are two general types of assessments - formal and informal. Formal assessments are objective tests that involve a preplanned (frequently published) set of procedures, recording scores, and normative tables against which the individual's performance can be compared. Formal assessments also typically involve setting aside a specific amount of time, as well as using a predetermined space and equipment. In physical education, these tests focus on perceptual motor fitness, coordination, gross motor ability, fine motor skill, physical fitness, cardiorespiratory functioning, anthropometric measures, and various sport skills.

Informal assessments are generally constructed by the person who intends to use them. Typically these tests include observation, rating scales, checklists, self-testing activities, and discussions with the individual, other teachers, parents, paraprofessionals, etc. Informal assessments can be done at any time, under any condition appropriate to the goal of the "test", and do not necessarily require the recording of scores.

When selecting an assessment, the following criteria should be considered:

1. Validity: the ability of the assessment to measure what it claims to measure.

2. Reliability: the ability of the assessment to give consistent, stable, and dependable results from one administration to the next.

3. Objectivity: the degree to which two separate examiners obtain the same score for any given performance.

4. Appropriateness: the relevance of the test and its components to the individual (needs, interests, capabilities) and to the goals of the examiner.

5. Discrimination: the ability of the test to adequately differentiate over a broad range of performances.

6. Administrative ease: the degree of practicality in relation to length, instructional simplicity, and scoring procedures.

7. Economy: the cost effectiveness of the amount of money, time, and personnel that must be used in the test's administration.

Six procedural steps for analysis of the parameters measured by the test can help in the interpretation of the results:

1. Analyze the demands: identify exactly what must be done by the examinee in each task.

2. Developmental order: determine the basic or lower functions that need to be identified and mastered before the skills required by the test can be assessed.

3. Determine the commonalities: identify the factors of performance which are common among tasks (these should be evident after analyzing the demands and ordering them).

4. Cluster by commonalities: group performances according to clusters of common factors, yet remember to keep them developmentally sequenced.

5. Performance description: in written or verbal form, construct a report of the results that describes what the individual can, and cannot, do.

6. Interpret: define the areas of dysfunction and label these according to the information clustered by commonalities.

Formal Assessments: The following section outlines a variety of formal tests used in adapted physical education.

A. Tests specific to one component of the psychomotor domain (* indicates the most widely used tests):

1. Perceptual motor tests: provide information related to the functioning of the sensory systems as they contribute to efficient movement.

a. Developmental Test of Visual-Motor Integration (VMI): measures the ability to imitate drawings of various forms - copying lines, circles, etc.; population - children, ages 2-15.

b. Frostig Development Test of Visual Perception (DTVP): measures eye-motor coordination, figure

ground, constancy of shape, and perception of spatial position and spatial relations; population - children, ages 4-8.

c. Motor-Free Visual Perception Test (MVPT): measures spatial relationships, visual discrimination, figure ground, visual closure, and visual memory; population - children, ages 4-9.

d: Perceptual-Motor Survey: measures static and dynamic balance, self-awareness, and spatial orientation; population - children, ages 5-12.

e. Purdue Perceptual Motor Survey: measures balance and posture, body image and differentiation, perceptual-motor match, ocular control, and form perception; population - children, ages 6-9.

f. Quick Neurological Screening Test: measures motor development, control of large and small muscles, motor planning and sequencing, sense of rate and rhythm, spatial organization, visual and auditory perceptual skills, and balance and cerebellar-vestibular function and disorders; population - children and adolescents, ages 6-18.

*g. Southern California Sensory Integration Test: measures figure ground, design copying, spatial positioning, kinesthesia, manual form perception, tactile discrimination, midline crossing, bilateral motor control, left-right discrimination, and static balance; population - children, ages 4-11.

2. Motor skills tests: provide information on the performance of application and combinations of motor patterns, or the performance of a motor pattern under specific conditions.

*a. Basic Movement Performance Profile: measures walking, pushing and pulling, ascending and descending stairs, climbing, carrying, running, throwing and catching, jumping, kicking, hitting, etc.; population - severe/profound mentally retarded.

*b. Brigance Diagnostic Inventory of Early Development: measures standing, walking, stair climbing, running, jumping, hopping, kicking, rolling/throwing, rhythm, etc.; population - general including handicapped, ages birth-6.

c. Godfrey-Kephart Movement Pattern Checklist - Short Form: measures walking, running, crawling, jumping, hopping, slapping, climbing,

rolling, sliding, hitting, kicking, etc.; population - handicapped and non-handicapped children, ages 3-12.

d. Hughes Basic Motor Assessment: measures jumping, walking, hopping skipping, throwing, and ball handling; population - children suspected of minor motor dysfunction, ages 5-1/2 - 12-1/2.

*e. Move-Grow-Learn Movement Skills Survey: measures coordination and rhythm, gross and fine motor skills, and static, dynamic and object balance, etc.; population - children, ages 5-12.

*f. The Ohio State University (OSU) Scale of Intra-Gross Motor Assessment (OSU-SIGMA): measures walking, stair climbing, running, throwing, catching, hopping, skipping, striking, kicking, and ladder climbing; population - children suspected of motor dysfunction.

g. Physical Ability Rating Scale: measures functional skills, copying, hopping, skipping, galloping, climbing, throwing, catching, etc.: population - physically handicapped, ages birth-6.

h. A Psychoeducational Inventory of Basic Learning: measures gross motor development, sensorimotor

integration, conceptual skills, etc.;
population - children, ages 5-8.

3. Motor ability tests: provide general information usually related to sports performance and including muscular strength, ability to change directions, flexibility, timing, coordination, peripheral vision, etc.; usually motor ability is synonymous with athletic ability.

   a. Basic Motor Ability Test - Revised: measures motor responses of large and small muscle control, static and dynamic balance, flexibility, and eye-hand coordination; population - children, ages 4-12.

   b. Body Coordination Test for Children (BCTC): measures backward beam walking, hopping, back and forth lateral jumping, and lateral moving; population - children, ages 5-14.

   *c. Bruninks-Oseretsky Test of Motor Proficiency: measures running speed, agility, balance, bilateral coordination, strength, reaction time, upper limb coordination and speed, visual-motor coordination, and dexterity; population - children, ages 4-1/2 - 14-1/2.

   d. Geddes Psychomotor Inventory (GPI): measures balance, visual skills, eye-hand and eye-foot

coordination, kinesthetic awareness, tactile discrimination, throwing, gross and fine motor abilities, speed, endurance, and softball throw; population - normal, learning disabled, educable mentally retarded, emotionally disturbed, and autistic children.

*e. Lincoln-Oseretsky Motor Development Scale: (Lincoln Adaptation of the Oseretsky Tests of Motor Proficiency): measures static coordination, dynamic manual coordination of hands, general dynamic coordination, motor speed, simultaneous movement, and synkinesia; population - children, ages 6-14.

f. Motor Proficiency Assessment: measures body fat/dead weight, balance, fine visual-motor coordination, upper limb-eye coordination, arm strength, spinal flexibility, and leg-power coordination; population - educable and trainable mentally retarded.

g. Preschool Test Battery: measures balance, agility, catching, speed, long jump, throw for distance, height, weight, leg length, and skinfold; population - children, ages 3-6.

h. Project Active: measures gross body coordination, balance and posture orientation,

eye-hand coordination, eye-foot accuracy, arm/leg/abdominal strength, and endurance; population - normal, learning disabled, educable mentally retarded, and emotionally disturbed, ages 5-17.

*i. Six Category Gross Motor Test: measures body image, gross agility, balance, locomotor agility tracking, and throwing; population - normal, ages 4-11; educable mentally retarded, ages 6-20; trainable mentally retarded, ages 5-24.

j. Stott-Moyes-Henderson Test of Motor Impairment: measures static balance and control, speed, eye-hand and eye-foot coordination, throwing, kinesthetic awareness, bilateral control, gross and fine motor abilities, and neurological dysfunction; population - children, ages 5-16 (except physically handicapped).

k. Trampoline Screening Test: measures balance, gross and fine motor abilities, and total body coordination; population - learning disabled, educable mentally retarded, and autistic school children.

4. Physical fitness tests: provide information on those factors which contribute to overall fitness for life (i.e., strength, power, agility,

flexibility, muscle and cardiorespiratory endurance, speed balance, and general coordination).

a. AAHPERD Youth Fitness Test, Adaptation for the Blind: measures agility, speed, arm-shoulder power, abdominal endurance, leg power, and cardiorespiratory endurance; population - blind and partially sighted, ages 6-20.

b. Fleishman Basic Fitness Test: measures flexibility, explosive, static and dynamic strength, gross body coordination, and endurance; population - youth, ages 12-18.

c. Hayden Physical Fitness Test for Mentally Retarded: measures arm-shoulder endurance, abdominal endurance, flexibility, leg power, and cardiorespiratory endurance; population - mentally retarded, ages 8-17.

d. Lifetime Health Related Fitness Test: measures cardiorespiratory function, body composition, abdominal function, and lower back/hamstring function; population, children and youth, ages 6-17.

e. Mr. Peanut's Guide to Physical Fitness: measures arm and shoulder strength, flexibility, abdominal strength and endurance, explosive leg power, speed, coordination, cardiorespiratory endurance; population - children, ages 7-9.

*f. Motor Fitness Testing for the Moderately Mentally Retarded: measures arm-shoulder endurance and power, abdominal endurance, leg power, speed, coordination, cardiorespiratory endurance, height, weight, flexibility, hopping, skipping, and throwing accuracy; population - trainable mentally retarded - ages 6-20.

g. Physical Fitness for the Mentally Retarded: measures muscular fitness of arms and shoulders, back flexibility, cardiorespiratory endurance, and physique; population - trainable mentally retarded, ages 8-17.

h. Physical Fitness Test Battery for Mentally Retarded Children: measures speed, static muscular endurance of arm and shoulder, muscle endurance of leg and abdominal muscles, static balance, agility, cardiorespiratory endurance; population - educable mentally retarded and trainable mentally retarded, ages 9-20.

*i. Project Active - Level II: measures cardiovascular fitness, abdominal strength and endurance, arm and shoulder strength, and explosive leg power; population - educable mentally retarded, learning disabled, and emotionally disturbed, ages 5-17.

*j. Project Unique: measures cardiorespiratory function, dynamic strength and endurance, static and explosive muscle strength, flexibility, static balance, agility, and percent body fat; population - blind, deaf, orthopedically impaired, ages 10-18.

*k. Special Fitness Test Manual for the Mentally Retarded: measures arm-shoulder endurance and power, abdominal endurance, agility, leg power, speed, coordination, and cardiorespiratory endurance; population - educable mentally retarded, ages 8-18.

5. Comprehensive Test:

a. Present Level of Performance Assessment for Children with Developmental Lag or Low Motor Ability (PLPA): measures fundamental motor skills and patterns, perceptual motor skills, physical fitness components, and postural deviations.

Informal Assessments. Informal assessments are generally those tests constructed by the teacher to meet the specific goals and requirements of his/her adapted physical education program. These tests are often used to assess ongoing progress. A variety of techniques can be used to develop these assessments.

1. Direct observation of student performance: view the individual actually performing the target activity in isolation or with a group. A systematic reading (e.g., frequency count) or an anecdotal account of the observed behavior can be made.

2. Self-testing activities: have the individual keep track of how well the activity was performed during a given session. Let that person chart or graph progress made over a period of time.

3. Exploration activities: allow the individual to attempt a new activity that requires the performance of certain target behaviors. Record how well the individual adapts known skills to the new situation.

4. Discussion/interview with individuals and those who work with them: talk with the individual about ability to perform a target activity, how exactly that skill is accomplished, or knowledge about how a game is played. Also interview the teachers, parents and peers who have witnessed the individual in action.

5. Video tape: make videotapes of the individual performing the target skills. Use these tapes to establish present level of performance and to discuss program plans or a specific instruction with the individual.

6. Behavioral objectives: after establishing the individual's present level of performance, develop specific

objectives that will be used to guide instruction. Objectives are always defined in terms of the individual's target behavior, the conditions of the performance, and the criteria for passing a battery. For example, John will continuously jump rope for 2 minutes (using both feet), with one jump about every 2 seconds.

7. Questionnaires: have individuals complete questionnaires from their perspectives or their abilities and knowledge, as well as opinions on instruction and instructional programs.

As informal assessments are typically designed and produced by the individual teacher, a list of all tests that have been developed is impossible. However, a couple of examples of tests constructed by graduate students in the Virginia Tech Special Physical Education program area are offered as suggestions.

1. King of Phyz and the Trials of Prune: a videotape is made of students as they participate in a scripted adventure story, which informally assesses the realm of psychomotor tasks. There are three major components, or acts: Act I, "The Quest", consists of fine and gross motor activities; Act II, "The Encounter", encompasses perceptual-motor activities; and Act III, "Flight to Safety", concentrates on physical fitness components. Assessment is completed by reviewing the tape and scoring student

performance on the evaluation form. (See Appendix A for a complete description of this assessment and the evaluation forms. A copy of a sample videotape on this assessment is available from the Health and Physical Education Division at Virginia Tech.)

2. Obstacle Course Assessment: the structure of an obstacle course was utilized to assess informally the capabilities of individuals in three areas of psychomotor development, perceptual motor skills, motor ability, and physical fitness. A description and rationale for inclusion is presented for each component, as well as a pictorial design, equipment list, and evaluation form. This assessment is intended for use with children suspected of having possible developmental lag or low motor ability. (See Appendix B for complete description of the obstacle course and evaluation forms.)

Developing an Adapted Physical Education Program

General Guidelines: The following statements apply to the development of a physical education environment for individuals of all abilities.

1. Assess and evaluate the student's individual needs.

2. Select activities based on the strengths, needs, development, chronological age, physical size, and interests of the individual.

3. Obtain relevant background information that will be of assistance in programming and understanding the individual.

4. Reinforce student strengths through providing positive experiences; more challenging activities can be provided when confidence is gained or strengthened.

5. Use demonstration and manual guidance, along with minimal verbal instructions; tangible and concrete instruction facilitates learning.

6. Break down each task into small sequential steps (i.e., task analysis), and instruct according to the sequence in the progression.

7. Have individuals apply skills in a variety of situations to increase the probability of transfer of learning.

8. Maintain interest and attention by presenting a variety of activities that are short in duration and frequently changed.

9. Center the instruction around the student's needs, rather than the needs of the teacher or the program; using teaching methods that work best with the student.

10. Use teaching stations to allow individuals to perform an activity at their ability level; design the stations so that each individual has his/her own equipment.

11. Implement a peer tutor or buddy system to help with instruction.

12. Attempt to redirect the inappropriate movements into productive behavior; reinforce when appropriate and constructive behavior is established.

13. Avoid elimination games, students picking their own teams, and waiting in lines for a turn; these may cause embarrassment to the individual.

Information Specific to Autism. The following guidelines should be incorporated into an adapted physical education program for autistic children.

1. Secure and maintain eye contact.
2. Use simple phrases and concrete terms.
3. Use patterning and manual positioning.
4. Use reinforcements, but not excessively.
5. Maintain a definite routine, provide structure.
6. Maintain consistency.
7. Encourage imitation.
8. Progress gradually from very simple to more complex tasks.
9. Initially use a confined area for programs.
10. Movement, rhythm, and dance usually work well; these activities help the student form a body image.
11. Use of mirrors may assist in self-identity.

12. Exercise may help to decrease self-stimulating behaviors.

Information Specific to Diabetes. The following guidelines should be considered when developing a physical education program for children with diabetes.

1. Determine the individual's tolerance level.

2. Regular daily exercise is recommended to decrease the need for insulin.

3. Special care must be taken to avoid cuts, abrasions and all types of infections.

4. Some form of sugar should be easily accessible to the individual.

5. Activities should be planned so that extreme fatigue is avoided.

6. Instruction in lifetime sports is recommended.

7. Each individual's situation will vary according to the level of physical activity, the amount of food in the system, and the emotional stress involved.

Information Specific to Emotionally Disturbed. The following guidelines should be incorporated into an adapted physical education program for emotionally disturbed children.

1. Gear the environment towards success.

2. Use problem solving techniques, encouraging individuals to slow down and consider alternatives when making decisions.

3. Reinforce reflective thinking as you see it occur.

4. Avoid using a punitive approach.

5. Ignoring annoying, yet unharmful, behavior may reduce the frequency of occurrence.

6. Build in appropriate ways to release frustration and aggression.

7. With withdrawn individuals, use activities in which only a couple students work together before expecting full participation with the group.

8. Depressed individuals need to be kept active even though they refuse.

9. Provide a well-structured environment with clear, concise expectations of both student and teacher behavior.

10. Give ample warning before making changes in the routine.

11. Remove distracting objects from the environment; restrict equipment to what is being used.

12. Minimize waiting time for activities to start, minimize competition.

Information Specific to Learning Disabilities. The following guidelines should be incorporated into an adapted physical education program for children with learning disabilities.

1. Give one instruction at a time, using short and simple sentences.

2. Programs should be structured to limit decision-making difficulties.

3. Use concrete examples; demonstrate activities.

4. Eliminate as many extraneous stimuli as possible.

5. Use multisensory cues when possible, if not confusing.

6. Establish a routine and maintain it; any changes should be gradual.

7. Set behavior limits individually for hyperactive and impulsive individuals.

8. Teach techniques for slowing down and/or remaining stationary.

9. Teach specific techniques for relaxation.

10. Plan for as many successful experiences as possible especially in the beginning.

Information Specific to Mental Retardation. Divided into levels according to the degree of retardation, the following guidelines should be incorporated into an adapted physical education program for mentally retarded children.

A. Educable Mentally Retarded

1. Teach for lifetime sports.

2. Provide activities for socially acceptable means of releasing aggression.

3. Use simplified and sequential directions.

4. Raise and reinforce attempts and performances.

5. Include structure and routine, and alter slowly if necessary.

6. Provide opportunities for decision making and independent actions.

B. Trainable Mentally Retarded

1. Social maturity must be considered when planning appropriate activities.

2. Allow longer periods of learning to take place.

3. Use limited terminology and reinforce it often.

4. Simplify sequences of instruction and repeat them.

5. Use concrete prompts when possible.

6. Demonstrate skill components to be learned.

7. Praise and reinforce attempts and performances.

C. Severe/Profound Mentally Retarded

1. Activities should be designed to increase awareness level, especially with respect to avoidance reactions and approach behaviors.

2. Teach progressive motor adjustments until sufficient strength is developed to enable sitting and standing without assistance.

3. Provide opportunities to improve manipulation (e.g. reaching, grasping).

4. Provide activities which will develop proper posture and locomotion.

5. Physical manipulation of body parts may be required for a period of time before the individual knows what they are to do.

6. Praise and reinforce attempts and performances (edible reinforcers will usually work best).

Information Specific to Musculoskeletal Disorders. The following sets of guidelines are suggested for the adapted physical education programs of individuals with different musculoskeletal disorders.

A. Muscular Dystrophy

1. Fatigue may come more easily, but individuals should participate until they are totally exhausted.

2. Sedentary activities should be incorporated so the individual can participate even when confined to a wheelchair.

3. Swimming, to increase arm power, is recommended to compensate for loss of leg strength.

B. Spina Bifida

1. Build in time limits on all activities to limit fatigue.

2. Analyze positions in game play - place individual where reduced movement is necessary.

3. Games should be devised to encourage practice in ambulation and upper arm strength.

C. Spinal Cord Injuries

1. Passive stretching and moving of the muscles around the joints, at periodic intervals throughout the day, help prevent contractures.

2. Build upper body strength for independent manipulation of the wheelchair which increases individual's ability to participate in wheelchair sports.

D. Arthritic Conditions

1. Daily exercise must be stressed - inactivity increases stiffness and deformity.

2. Exercise sequences should be planned to strengthen the extensors, abductors, internal rotators, and pronators; these are where deformities develop.

3. Flexion exercises are contraindicated.

4. Minimize gravitational pull, at first, by doing exercises in a lying position.

5. Activities that are not recommended include jumping activities with frequent falls, contact sports, diving, horseback riding.

6. Swimming is highly recommended as warm water facilitates movement and reduces muscle spasm.

E. Limb Deficiencies

1. Assess all possible movements and need for adapted equipment.

2. Must exercise and strengthen the uninvolved extremities.

3. Design activities for the most effective use of the prosthesis.

4. As balance maintenance is difficult during the early stages, design activities to progress in small successive steps to build confidence and balance.

Information Specific to Neuro-Muscular Disorders. Those guidelines that pertain to three types of cerebral palsy and multiple sclerosis are outlined in this section.

A. Cerebral Palsy

1. Spasticity

a. Plan large movement activities rather than fine motor tasks.

b. Design activities which require minimal balance.

c. Teach relaxation techniques, control for stress.

d. Focus on slow static stretching exercises.

e. Emphasize proper posture to increase efficient movement.

2. Athetosis

a. Plan activities that do not require fine, coordinated movements.

b. Keep balance requirements at a minimum.

c. Warm-ups are not necessary - muscles are in a constant state of readiness.

d. Teach muscular control through relaxation.

3. Ataxia

a. Plan activities with large muscle movements.

b. Anticipate balance difficulties.

c. Do not include activities in which the student must step over obstacles.

B. Multiple Sclerosis

1. Movement potential must be carefully assessed.

2. Weakened muscles should not be overtaxed.

3. Keep student active, as maintaining an exercise program slows the rate of muscle deterioration.

4. Creativity and enthusiasm are extremely necessary in motivating participation.

Information Specific to Seizure and Convulsive Disorders. While many activities found in a regular physical education program are appropriate, the following guidelines must be considered for students with epilepsy.

1. Once seizures are controlled, individuals can participate with their peers.

2. Activities involving heights, underwater swimming, and body contact, need to be supervised more carefully.

3. Design activities to improve the cardiorespiratory system as improvement may lead to reduced seizures.

4. Provide games that emphasize varied and vigorous leg muscle activity.

Information Specific to Sensory Disorders. Guidelines for physical education activities for students with hearing or visual impairments include the following:

A. Hearing Impaired (Residual hearing should be used.)

1. Position yourself so that the individual can see your face when giving directions.

2. Speak clearly but avoid over-emphasizing words or speaking slowly.

3. Use visual aids whenever possible (e.g., blackboard, overhead projector, etc.).

4. Avoid standing in shadows or with your back to the sun.

5. Provide opportunities for individuals to "feel" music (e.g. holding a balloon).

6. Make use of peer tutor to aid in the interpretation of instructions.

7. Reinforce efforts the individual puts forth in speaking.

8. Know the mode of communication used with the student - require its usage.

9. Communication and balance difficulties should be the major area of concern.

B. Visually Impaired (Residual sight should be used.)

1. Skills must be broken down into small steps.

2. Use reference (anchor) points when giving directions.

3. Balance and proprioceptive awareness might be poor.

4. Enlarge target objects - use bright colored equipment.

5. When planning, close your eyes to gain insight into the information needed.

6. Make use of peer tutors to aid with demonstrations for the individual.

Construction of the Individualized Education Program (IEP).

Once the interpretation of the test results is complete, this information, along with knowledge about how to program for the particular handicap, is used to develop the IEP. According to Public Law 94-142, the following components must be included in the document:

1. the student's present level of performance as outlined by the assessments;

2. a statement of annual goals, including short term instructional objectives;

3. the specific services to be provided for the individual;

4. the projected dates for initiation and termination of services;

5. objective criteria and assessment procedures to determine progress in achieving objectives and goals;

6. description of the testing environment and procedures; and,

7. specific placement in the institution's regular and special educational programs.

As each school division within each state has its own specific form for an IEP, it would be difficult to illustrate examples of each one. However, a simple example of an IEP is shown in Appendix C. This sample has all of the critical aspects as required by law, yet it is not lengthy nor complicated.

The IEP should be prepared by a multidisciplinary team of professionals and the student's parents or guardian. Typically, the regular classroom teacher, special education teacher, adapted physical education specialist, building principal, special education supervisor, parent, and sometimes the student work together to develop a complete and appropriate program.

Further information on IEP development is available from the special education supervision at your education association (LEA) or school division, or contact your state office of special education for assistance.

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Chapter 3

Modifications of Physical Education Activities for the Handicapped

An integral part of any adapted physical education curriculum is the program of activities. These activities should be designed to ensure success, yet offer a challenge to each student. The student's capability to perform specific activities is assessed through the formal and informal testing procedures mentioned in the previous chapter. From these assessments, the teacher may find that the student needs to develop or improve basic skills such as throwing and catching. In those cases, the teacher must incorporate developmental or movement activities into the student's program. Information on these kinds of activities is available in the reference list at the end of this chapter.

Once basic skills have been developed, instruction in mainstreamed physical education activities may begin. As such, the purpose of this chapter is to describe how activities typically found in mainstreamed physical education classes can be modified or adapted for special populations. After a brief discussion of general guidelines for adapting activities, this chapter is organized according to specific activities. First, general modifications for each activity are outlined. Then, modifications for

specific disabilities are presented. As with the other chapters, this chapter is concluded with a reference section that offers resources with additional suggestions for activities.

General Guidelines

Students will be able to participate in a variety of activities through the provision of appropriate adjustments and modifications in the equipment and/or activity. General guidelines include:

1. Base the activity on what the individuals can do, rather than on what their diagnostic label appears to dictate.

2. When planning activities, involve the handicapped individual in the development process. Refer to the individual's assessment results. Talk with the student about your plans for his/her physical education program. This will allow you to gain direct access to information on the best way to accomplish the task.

3. Change the game rules, activities, etc., only as much as needed in accordance with individual needs.

4. Encourage individuals to have fun and remain physically active throughout the game.

Above all, it is important to consider each individual when planning activities. Some have already developed the modification techniques they need in order to participate

successfully. Activities that become unrecognizable, due to extreme adaptations, may be rejected and even resented. The best "rule of thumb" is to consider slight modifications before more obvious ones.

Aquatics

General modifications

1. Vary the depth of the water (utilize stairs, tables, shallow areas, etc.).
2. Vary the temperature of the water.
3. Vary the distance of the events.
4. Offer leniency toward stroke legality; allow personal adaptations.
5. Allow in-water starts.
6. Vary legality of turns.
7. Utilize flotation devices.

Modification possibilities specific to exceptionality

1. Autism:
   a. Minimize competition; participate for fun.
   b. Clearly specify pool boundaries.
2. Diabetes:
   a. Allow sufficient rest periods.
   b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
3. Emotionally disturbed:
   a. Minimize competition; emphasize sportsmanship.

b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.

4. Learning disabilities:
   a. Clearly specify boundaries.
   b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
5. Mental retardation:
   a. Those tested as having Atlantoaxial Subluxation, or those yet untested (x-rays are necessary), cannot participate in diving, diving starts, or the butterfly stroke.
   b. Use constant reinforcement of rules and terms.
   c. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
6. Musculoskeletal disorders:
   a. Allow students to compete against those with similar limitations.
   b. Allow "sit" entries.
   c. Provide sufficient rest periods.
7. Neuro-muscular disorders:
   a. Allow students to compete against those with similar limitations.
   b. Allow "sit" entries.
   c. Provide sufficient rest periods.
   d. Do not disqualify for off-balance start.
8. Seizure and convulsive disorders:

a. Supervise carefully; be prepared to handle seizures. If a seizure should occur, these steps should be followed:

1. Stay calm.
2. Remove from the immediate area any objects that may cause injury (e.g., chairs, tables, etc.).
3. Do not try to restrain the person.
4. Do <u>not</u> place anything in the person's mouth.
5. Let the seizure run its course.
6. Have all other people leave the area.
7. Once the seizure is finished, allow the person to rest.
8. Report the seizure to the school nurse and the child's parents.

b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.

9. Sensory disorders:

a. Hearing impaired:

1. Use hand signals to signify events, direction, etc.
2. Use visual aids for marking distance, displaying times, etc.
3. Use flashing lights to indicate start.
4. Provide drop rope for false starts.

b. Visually impaired:

1. Use a different textured surface for depth recognition.
2. Use audible touch-plates.
3. Use Braille numbers to designate different lanes.

Basketball

General modifications

1. Lower the goal.
2. Use smaller court boundaries; gradually enlarge court boundaries as athletes develop skills.
3. Use lighter, different-sized balls.
4. Vary the number of players per team; use more offensive than defensive players.
5. Offer leniency toward violations such as travelling, double dribble, etc.; gradually enforce rules (e.g., must dribble once every 5, 4, 3....steps).
6. Provide longer time for offense in the key.
7. Vary the length of actual game play.

Modification possibilities specific to exceptionality

1. Autism:
   a. Do not keep score; participate for fun.
   b. Set definite, clear boundaries.

2. Diabetes:
    a. Allow additional time-outs.
    b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
3. Emotionally disturbed:
    a. Minimize competition; emphasize sportsmanship.
    b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
4. Learning disabilities:
    a. Mark boundaries clearly.
    b. Designate individual areas of responsibilities.
    c. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
5. Mental retardation:
    a. Use constant reinforcement of rules and terms.
    b. Number or color-code paths for defensive and offensive plays.
    c. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
6. Musculoskeletal disorders:
    a. Play "wheelchair basketball".
    b. Use peer tutors to help with mobility.
    c. Allow peer tutors to be teammates, but require that the ball be contacted by a handicapped individual before a goal attempt.
    d. Additional rest periods may be needed.

7. Neuro-muscular disorders:
    a. Play "wheelchair basketball" if balancing is too difficult.
    b. Provide additional time-outs.
    c. Teach individuals how to fall from crutches or wheelchairs.
8. Seizure and convulsive disorders:
    a. Supervise very closely; be prepared to handle seizure. See guidelines for handling seizures (page 67).
9. Sensory disorders:
    a. Hearing impaired:
        1. Use hand signals with verbalization.
        2. Use visual aids; display directions, plays, etc., on poster board or a chalkboard.
        3. Use lights for game signals.
    b. Visually impaired:
        1. Use an audible goal.
        2. Use an "audiball".
        3. Use sighted partners.
        4. Vary game pace.
        5. Play stationary games rather than "basketball".

Bowling

General modifications

1. Vary the length of the lane.

2. Vary the number and size of the pins.
3. Vary the number of trials.
4. Use lighter, different-sized balls.

Modification possibilities specific to exceptionality

1. Autism:
   a. Do not keep score; participate for fun.
   b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
2. Diabetes:
   a. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
3. Emotionally disturbed:
   a. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
4. Learning disabled:
   a. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
5. Mental retardation:
   a. Reinforce rules and terms.
   b. Demonstrate the approach with foot patterns on floor.
   c. Use a ball with a retractable handle for weaker persons.
   d. Use a push stick if necessary.

e. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.

6. Musculoskeletal disorders:
   a. Use a ball with a retractable handle.
   b. Use a push stick.
   c. Use a bowling ramp.
   d. Eliminate the approach for persons with limited mobility.
   e. Allow a preliminary (warm-up) swing for wheelchair bowlers.
7. Neuro-muscular disorders:
   a. Allow bowlers to sit if balancing is too difficult.
   b. Allow a wider stance, release the ball between the legs.
   c. Use a ball with a retractable handle.
   d. Use a push stick.
   e. Use a bowling ramp.
   f. Eliminate the approach for persons with limited mobility.
8. Seizure and convulsive disorders:
   a. Supervise; be prepared to handle seizures. (See guidelines for handling seizures, page 67).

b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.

9. Sensory disorders:

a. Hearing impaired:

1. Use sign language with verbalizations.

2. Use visual aids for player up, scores, etc.

b. Visually impaired:

1. Use audible pins.

2. Use an audiball.

3. Use a bowling rail for a guide wire.

4. Use peer tutors to help with direction, aim.

Field Events

General modifications

1. Vary the weights and sizes of equipment.
2. Vary the starting circle size.
3. Eliminate spin on throws.
4. Eliminate approaches on javelin, jumps, etc.
5. Provide alternate events (softball throw, frisbee, etc.).

Modification possibilities specific to exceptionality

1. Autism:

a. Minimize competition; participate for fun.

b. Clearly mark all boundaries.

2. Diabetes:

a. Provide sufficient rest periods.

b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.

3. Emotionally disturbed:
   a. Minimize competition; emphasize sportsmanship.
   b. Provide sufficient supervision.
   c. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
4. Learning disabilities:
   a. Mark all foul lines, circles, etc., clearly.
   b. Provide foot patterns on the floor for spins and approaches.
   c. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
5. Mental retardation:
   a. Discus, javelin, hammer throw, and pole vault are prohibited by Special Olympics; as such, these events are not recommended for adapted physical education programs.
   b. Mark all foul lines, circles, etc., clearly.
   c. Give constant reinforcement of rules and terms.
   d. Provide foot patterns on the floor for spins and approaches.
   e. Refer to Chapter 2 for specific teaching suggestions.
6. Musculoskeletal disorders:

a. Allow a partner to balance/stabilize the wheel chair.

b. Allow upper extremity amputees to throw using prosthesis.

c. Allow a partner to help balance those on crutches.

d. Provide sufficient rest periods.

7. Neuro-muscular disorders:

a. Allow a partner to balance/stabilize the wheel chair.

b. Allow a partner to help balance those on crutches.

c. Permit slight leniency on foot fouls due to balance difficulties.

d. Provide sufficient rest periods.

8. Seizures and convulsive disorders:

a. Supervise; be prepared to handle seizures. (See guidelines for handling seizures, page 67).

b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.

9. Sensory disorders:

a. Hearing impaired:

1. Use hand signals to signify event, directions, etc.

2. Use visual aids for marking distance, height, etc.

b. Visually impaired:

1. Use a different textured surface for foul lines, circles, etc.
2. Use an audible high jump bar.
3. Allow a sighted partner to give directional assistance.

Floor Hockey

General modifications

1. Use larger, or smaller, goal.
2. Use larger pucks.
3. Vary the size of the playing area.
4. Vary the number of players per team.
5. Vary the length of game play.
6. Disregard the off-sides rule.

Modification possibilities specific to exceptionality

1. Autism:
   a. Do not keep score; participate for fun.
   b. Set very definite clear boundaries.
   c. Delineate specific areas of responsibility.
2. Diabetes:
   a. Allow additional rest periods.
   b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
3. Emotionally disturbed:

a. Minimize competition; emphasize sportsmanship.

b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.

4. Learning disabilities:

   a. Mark boundaries clearly.

   b. Delineate specific areas of responsibility.

   c. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.

5. Mental retardation:

   a. Use constant reinforcement of rules and terms.

   b. Delineate specific areas of responsibility.

   c. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.

6. Musculoskeletal disorders:

   a. Permit one-handed stick play.

   b. Allow extremity amputees to use their feet and legs for hitting and trapping.

   c. Crutches may be used in lieu of hockey sticks.

   d. Use peer tutors to help with mobility.

   e. Peer tutors can be teammates, but require that the puck be contacted by a handicapped individual before a goal attempt.

   f. Allow additional time-outs.

7. Neuro-muscular disorders:

a. Play "wheelchair floor hockey" if balancing is too difficult.

b. Provide additional time-outs.

c. Begin each play with a stationary puck.

8. Seizure and convulsive disorders:

a. Supervise closely; be prepared to handle seizure. (See guidelines for handling seizures, page 67).

b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.

9. Sensory disorders:

a. Hearing impaired:

1. Use hand signals with verbalization.

2. Use visual aids; display directions, plays, etc., on poster board.

3. Use flashing lights for additional signals.

b. Visually impaired:

1. Use an audible goal.

2. Use an audible puck.

3. Use sighted partners.

4. Vary the game pace.

Gymnastics

General modifications

1. Alter the height of equipment.

2. Use a spotting belt.

Modification possibilities specific to exceptionality

1. Autism:
   a. Eliminate the pressure of utilizing equipment.
   b. Mark clear boundaries on mats, beams, etc.
2. Diabetes:
   a. Allow rest periods when needed.
   b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
3. Emotionally disturbed:
   a. Eliminate pressure of utilizing equipment.
   b. Mark clear boundaries.
   c. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
4. Learning disabilities:
   a. Mark clear boundaries.
   b. Place foot/hand patterns in proper positions on mats/equipment.
   c. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
5. Mental retardation:
   a. Those tested as having Atlantoaxial Subluxation, or those not yet tested (x-rays are necessary), cannot participate.
   b. Use constant reinforcement of rules and terms.

c. Place foot/hand patterns in proper positions on mats/equipment.

d. Provide manual assistance on skills.

e. Provide boundary markings on floor mat, beam, bars, etc.

f. Refer to Chapter 2 for specific teaching suggestions.

6. Musculoskeletal disorders:

a. Vary length of routines.

b. Develop a routine using only arms or only legs.

c. Do not require mounts; start and finish on equipment.

d. Refer to Chapter 2 for specific teaching suggestions.

7. Neuro-muscular disorders:

a. Vary the length of routines.

b. Develop routines using only arms or only legs.

c. Do not require mounts and dismounts; start and finish on equipment.

d. Refer to Chapter 2 for specific teaching suggestions.

8. Seizure and convulsive disorders:

a. Do not allow participation on high-level equipment.

b. Supervise closely; be prepared to handle seizures. (See guidelines for handling seizures, page 67).

c. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.

9. Sensory disorders:

a. Hearing impaired:

1. Use flashing lights to signify a beat as well as the beginning and end of routine.
2. Use hand signals with verbalization.
3. Use visual aids; display directions, scores, etc., on poster board.

b. Visually impaired:

1. Use an audible springboard.
2. Use a different textured material to mark equipment boundaries.
3. Use an audible signal in dismount area.
4. Use flashing lights on equipment.
5. Do not require mounts and dismounts; start and finish on equipment.

Soccer

General modifications

1. Make larger or smaller goal.
2. Enlarge or decrease the size of the playing area.
3. Use different-sized balls.
4. Disregard the off-side rule.

5. Vary the number of players per team.

6. Vary the length of actual game play.

Modification possibilities specific to exceptionality

1. Autism:
    a. Do not keep score; participate for fun.
    b. Set very definite clear boundaries.
2. Diabetes:
    a. Allow additional rest periods.
    b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
3. Emotionally disturbed:
    a. Minimize competition; emphasize sportsmanship.
    b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
4. Learning disabilities:
    a. Specify clear boundaries.
    b. Designate individual areas of responsibility.
    c. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
5. Mental retardation:
    a. Those tested as having Atlantoaxial Subluxation, or those yet untested (x-rays are necessary), may not participate in this sport.
    b. Constantly reinforce rules and terms.
    c. Designate individual areas of play.

d. Refer to Chapter 2 for specific teaching suggestions and other modifications.

6. Musculoskeletal disorders:
   a. Use an all-weather type floor surface for wheelchairs.
   b. Permit use of hands by wheelchair players.
   c. Allow footrests to act as feet in "dribbling" by wheelchair players.
   d. Allow wheelchair players to "trap" the ball into their lap.
   e. Allow those with upper extremity amputations, etc., to kick for a "throw-in".
   f. Use peer tutors to help with mobility.
   g. Peer tutors can be teammates, but the ball must be contacted by a handicapped individual before a goal attempt.
   h. Allow crutches to be used to strike the ball.
7. Neuro-muscular disorders:
   a. Play "wheelchair soccer" if balancing is too difficult.
   b. Provide additional time-outs.
   c. Begin each play with a stationary ball.
8. Seizure and convulsive disorders:
   a. Supervise closely; be prepared to handle a seizure. (See guidelines for handling seizures, page 67).

b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.

9. Sensory disorders:

a. Hearing impaired:

1. Use hand signals with verbalization.

2. Use visual aids; display directions, plays, etc., on poster board.

b. Visually impaired:

1. Use an audible goal.

2. Use an audiball.

3. Use sighted partners.

4. Vary the game pace.

Softball

General modifications

1. Use different-sized balls.

2. Vary the number of players per team.

3. Do not count outs; give everyone a chance at bat.

4. Use a stationary ball or batting tee.

5. Use lighter, larger bat.

6. Use a smaller field; vary the number of bases.

7. Vary the length of game play.

Modification possibilities specific to exceptionality

1. Autism:

a. Do not keep score; participate for fun.

b. Set definite clear boundaries.

c. Set specific playing areas for each person.

2. Diabetes:
    a. Allow additional rest periods.
    b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
3. Emotionally disturbed:
    a. Minimize competition, emphasize sportsmanship.
    b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
4. Learning disabilities:
    a. Mark boundaries clearly.
    b. Designate individual areas of responsibility.
    c. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
5. Mental retardation:
    a. Constantly reinforce rules and terms.
    b. Designate the path for base running.
    c. Designate individual areas of responsibility.
    d. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
6. Musculoskeletal disorders:
    a. Use all-weather type floor surface for wheelchairs.
    b. Shorten the length between bases.
    c. Allow more ambulatory persons to run bases.
    d. Use peer tutors to help with mobility.
    e. Instead of bases, use "fair territory".

7. Neuro-muscular disorders:
    a. Play "wheelchair softball" if balancing is too difficult.
    b. Use velcro gloves, ball and bat.
    c. Shorten the length between bases.
8. Seizure and convulsive disorders:
    a. Supervise; be prepared to handle seizures. (See guidelines for handling seizures, page 67).
    b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
9. Sensory disorders:
    a. Hearing impaired:
        1. Use hand signals along with verbalization.
        2. Use visual aids; display directions, plays, etc., on poster-board.
    b. Visually impaired:
        1. Use an audiball.
        2. Use an audible signal for base running.
        3. Allow a bounce pitch.
        4. Play "beep baseball".
        5. Use sighted players as guides for base running, etc.

Track Events

General Modifications

1. Vary the length of the event.

2. Vary the size and weight of the baton.
3. Vary the speed necessary for event; i.e., have a walking race.
4. Use leniency toward lane changes; vary the lane width.
5. Vary the starting position.

Modification possibilities specific to exceptionality

1. Autism:
   a. Minimize competition; participate for fun.
   b. Clearly mark all areas.
2. Diabetes:
   a. Provide additional resting times.
   b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
3. Emotionally disturbed:
   a. Minimize competition; allow self-competitiveness.
   b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
4. Learning disabilities:
   a. Mark all start and finish lines clearly.
   b. Designate the area for baton passing.
   c. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
5. Mental retardation:
   a. Mark all start and finish lines clearly.

b. Designate the area for baton passing.

c. Place a foot pattern on track where person should wait for pass.

d. Color code lanes for individuals.

e. Use constant reinforcement for terms and rules.

f. Place a foot pattern on track for the first step.

g. Refer to Chapter 2 for specific teaching suggestions.

6. Musculoskeletal disorders:

a. Offer wheelchair events.

b. Offer events for those on crutches.

c. Use a lightweight velcro "baton" for upper extremity amputees.

d. Eliminate the use of a baton in relays.

e. Use peer tutors to help with mobility when needed.

f. Provide sufficient rest periods.

7. Neuro-muscular disorders:

a. Offer wheelchair events.

b. Offer events for those on crutches.

c. Use a velcro baton and globe for ease of control.

d. Provide sufficient rest periods.

8. Seizures and convulsive disorders:

a. Supervise; be prepared to handle seizures. (See guidelines for handling seizures, page 67).

b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.

9. Sensory disorders:

a. Hearing impaired:

1. Use hand signals for the start of a race.
2. Use flashing lights for the start of the race.
3. Use visual aids; display lap time, laps to go, etc.

b. Visually impaired:

1. Use raised, different textured starting lines.
2. Use guide wires (for short distances).
3. Use sighted partners (for long distance) holding cord, etc.
4. Provide an audible finish line.
5. Use a different textured surface for the area preceding the finish line.
6. Provide an audible baton.

Volleyball

General modifications

1. Lower the net.

2. Reduce the boundaries; extend the boundaries as students' skills progress.
3. Vary the number of hits per team.
4. Use a lighter, larger ball.
5. Provide trials on first serves.
6. Vary the number of players per team.
7. Offer leniency toward the legality of hit.

Modification possibilities specific to exceptionality

1. Autism:
   a. Do not keep score; participate for fun.
   b. Set very definite clear boundaries.
2. Diabetes:
   a. Allow additional rest periods.
   b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
3. Emotionally disturbed:
   a. Minimize competition; emphasize sportsmanship.
   b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
4. Learning disabilities:
   a. Mark boundaries clearly.
   b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
5. Mental retardation:
   a. Use constant reinforcement of rules and terms.

b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.

6. Musculoskeletal disorders:
   a. Play "sit volleyball".
   b. Allow serves and hits using any mobile part of the body, or prosthesis.
   c. Use peer tutors to help with mobility.
   d. Allow peer tutors as teammates; however, require that a handicapped individual contact the ball before it goes over the net.
   e. Allow additional rest periods.
7. Neuro-muscular disorders:
   a. Play "sit volleyball" if balancing is too difficult.
   b. Allow double hits where muscular control is difficult.
   c. Provide additional rest periods as needed.
8. Seizure and convulsive disorders:
   a. Supervise; be prepared to handle seizures. (See guidelines for handling seizures, page 67).
   b. Refer to Chapter 2 for specific teaching suggestions; other modifications are minimal.
9. Sensory disorders:
   a. Hearing impaired:
      1. Use hand signals along with verbalization.

2. Use visual aids; display directions, calls on posterboard.
3. Use flashing lights.

b. Visually impaired:

1. Use an audible goal.
2. Use an audi-ball.
3. Permit the ball to bounce before a hit; if it is not trapped or caught before rolling out of bounds, the other side scores.
4. Use sighted partners to call directions, etc.

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Chapter 3

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Chapter 4

Adaptive Equipment That Can Be Made or Purchased

Equipment is an essential part of any physical education program. Often, with a little creativity, typical equipment, such as balls and hula hoops, can be easily integrated into an adapted physical education program. However, many times this equipment may not adequately meet the needs of students who need to develop or improve basic skills such as balance or eye-hand coordination. This chapter focuses on the equipment that will enhance an adapted physical education program. First, examples of the types of equipment that can be made with little effort and money are described in terms of their use and construction. Then, a list of companies from which you can purchase equipment is outlined, followed by specific resources on adaptive equipment. As with the other chapters, the chapter is concluded with a reference list.

Self-Constructed Equipment

The purpose of this section is to illustrate a number of different kinds of adaptive equipment that you can construct. For each piece of equipment, its specific use, method of construction, and step-by-step illustration of construction are described. Much of the adaptive equipment outlined in this chapter can be further modified to meet the individual needs of your students.

Deck Tennis Rings

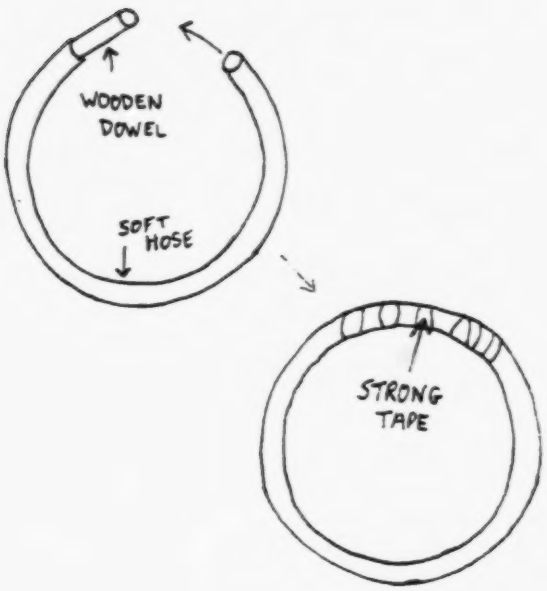
a. Use: Facilitate the development and refinement of manipulative skills.

b. Construction:

1) Cut pieces of soft (pliable) hose into specified lengths (e.g., 12 inches) and bend to form a circle.

2) Insert a 3-inch dowel into the open ends to complete the circle.

3) Wrap strong tape around the closure point to keep ring secure.



Wands

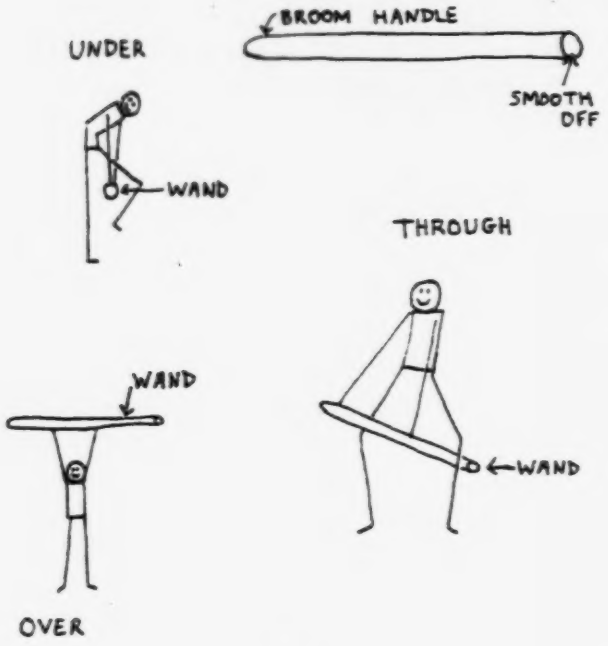
a. Use: Facilitate the development of fundamental movement concepts.

b. Construction:

1) Cut old broom, mop, etc., handles into specified lengths (e.g., 30 inches).

2) Smooth the edges with sandpaper.

3) Use bright colored paints for added effect.



Can Stilts

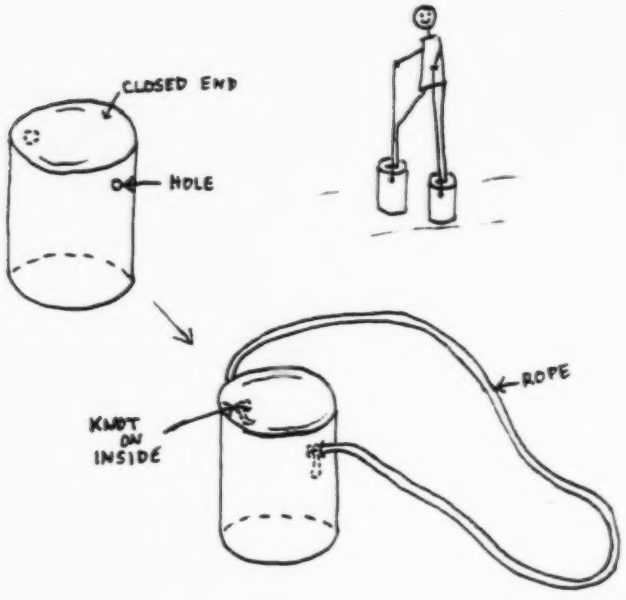
a. Use: Facilitate the development and refinement of balance.

b. Construction:

1) Cut or punch a hole on either side of a gallon (#10) can approximately one-half inch from the top and at the closed end.

2) Insert one end of a four foot rope into one hole and tie inside; do the same for the other end.

3) Remember to make two stilts for each individual.



Nylon Paddles

a. Use: Facilitate eye-hand coordination and develop striking skills.

b. Construction:

1) Bend a coat hanger to the desired shape (e.g., diamond).

2) Straighten out the curved part with pliers.

3) Slide the hanger into a nylon stocking, pulling as tight as possible, yet leaving the toe hanging.

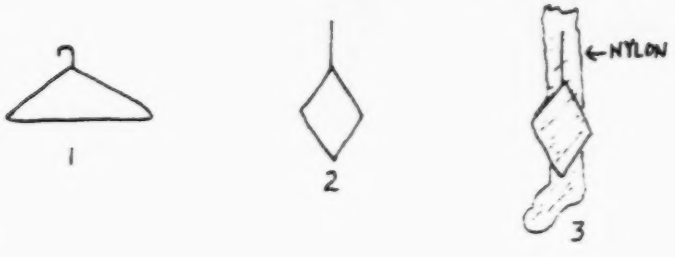
4) Use a "twister" to secure the toe section to the hanger.

5) Tie knots with the excess stocking and then trim off.

6) Stretch the nylon tight and secure with a "twister" at the beginning of the handle.

7) Wrap the excess stocking around the handle, securing it at least 3 times with "twisters".

8) Finish by wrapping the handle with masking tape.



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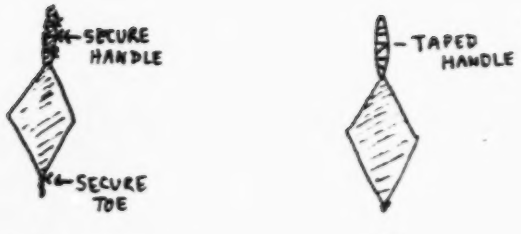

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Badminton Balls

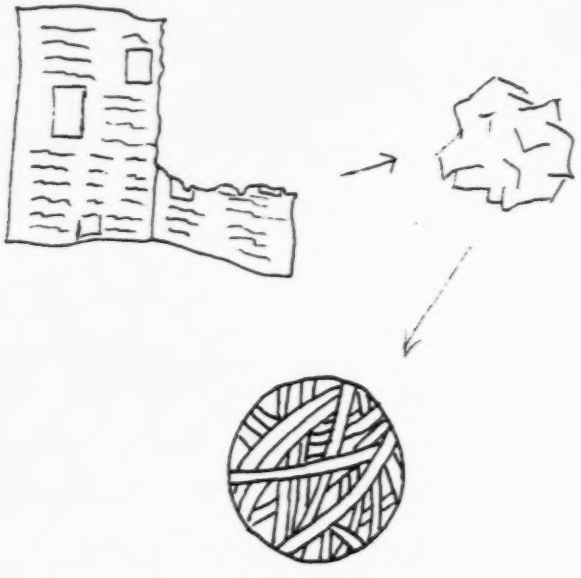
a. Use: Help in development of eye-hand coordination. (These balls work well with nylon paddles.)

b. Construction:

1) Dependent on size desired, crumple a section of newspaper into a tight ball.

2) Wrap with masking tape to form a firm ball.

3) Press the tape firmly on all sides.

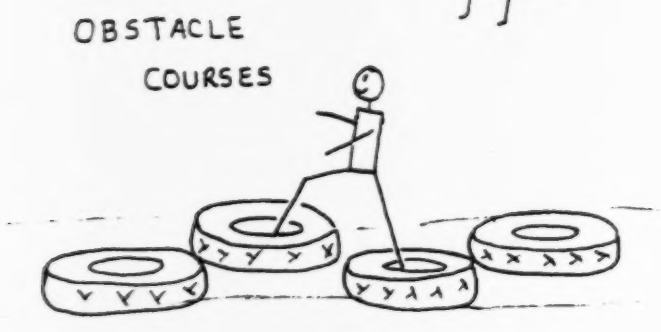


Tire Equipment

a. Use: Facilitates many different areas of development (balance, strength, flexibility, coordination, etc.) dependent on the developer's imagination.

Construction:

Tires can be used as is or as part of constructed equipment. For example, tires can be used in different positions for climbing apparatus. Tires can be made into swings or bridges. They can be incorporated into obstacle courses or used as hurdles, etc.



<u>Bean Bags</u>

a. Use: Facilitate development and refinement of manipulative skills.

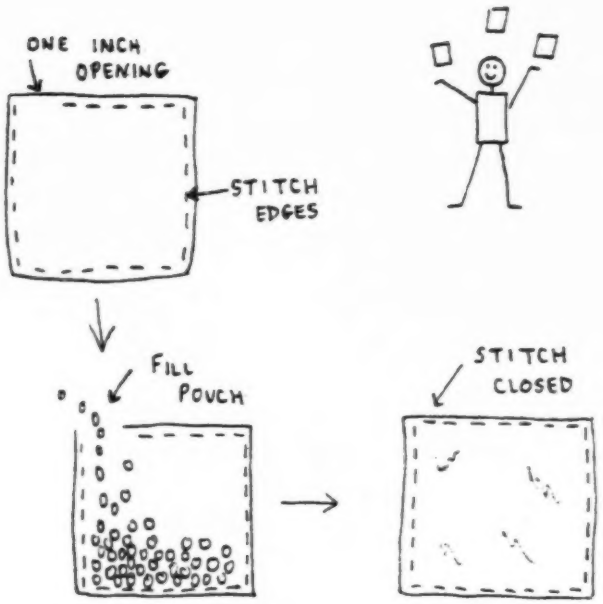
b. Construction:

1) Cut two pieces of strong fabric into the desired shape and size.

2) Stitch two pieces together firmly, leaving approximately one inch open.

3) Fill the pouch with beans, corn, peas, etc.

4) Finish stitching.



Net Standards

a. Use: Provide supports for various nets (volleyball, tennis, etc.).

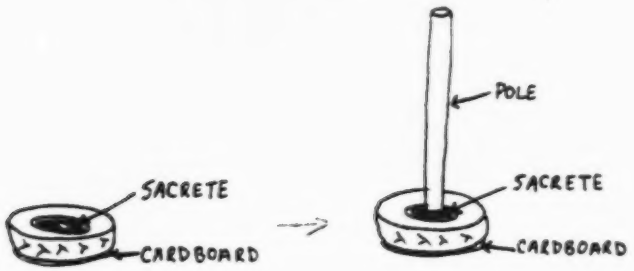
b. Construction:

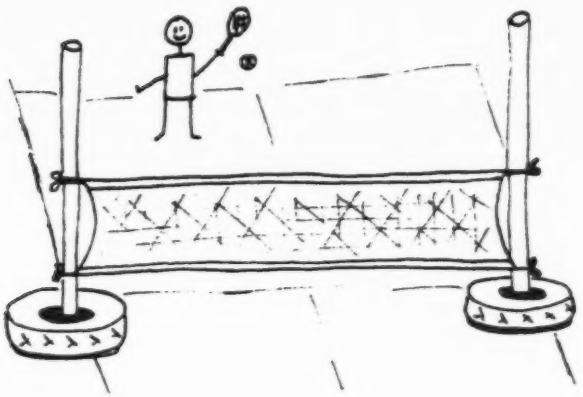
1) Place cardboard on the bottom of an old tire.

2) Fill the tire with Sacrete.

3) While the Sacrete is still wet, insert a piece of pipe (desired height and diameter) into the center of the tire.

3) Brace the pipe so that it remains straight and let dry for a couple of days.





Hoops

a. Use: Contribute to the development of flexibility, coordination, balance; can also be useful as targets, etc.

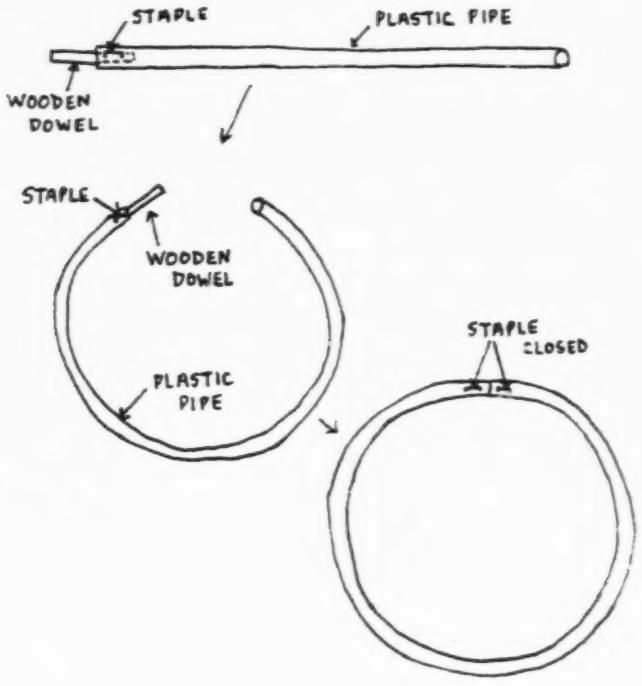
b. Construction:

1) Cut pieces of plastic pipe into desired length (e.g., 6 feet).

2) Insert one half of a wooden dowel into one end; secure with a staple gun.

3) Form a circle and insert the rest of the dowel into the other end; secure with a staple gun.

4) Added strength can be obtained by wrapping electrical tape around the closure.



Yarn Balls

a. Use: Facilitate development and refinement of eye-hand coordination, manipulative skills, etc.

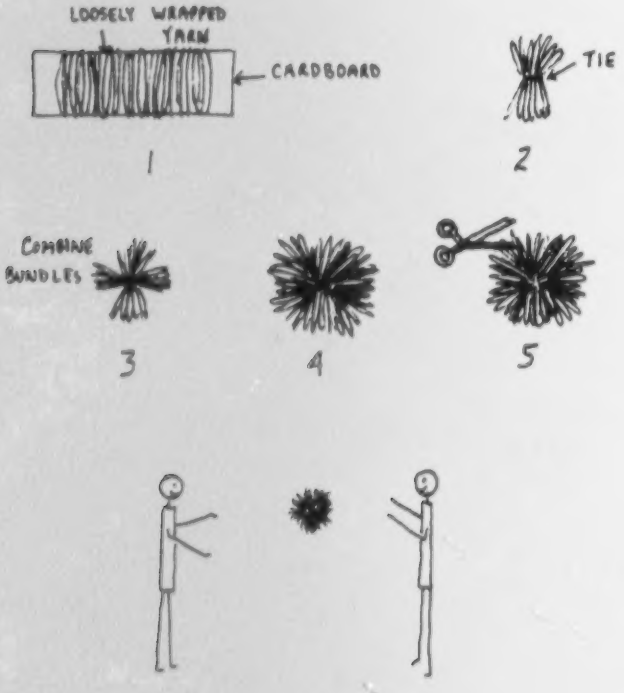
b. Construction:

1) Wrap yarn loosely around a piece of cardboard (approximately 4 inches wide) about 20 times.

2) Slip the yarn off and tie it tightly in the center with a piece of yarn.

3) When several bundles are made, they should then be tied together until the desired size is obtained.

4) Cut all the looped ends, and even out to form a ball.



Batting Tees

a. Use: Offer stationary placement for balls when developing or refining striking skills.

b. Construction:

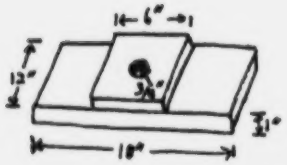
1) Glue and nail a 1-inch by 6-inch by 12-inch piece of wood to a 1-inch by 12-inch by 18-inch piece of wood.

2) Drill a hole in the center, large enough to fit a 3/4 inch pipe nipple.

3) Insert the pipe nipple (it should be a snug fit).

4) Place a 2-foot piece of 1-inch pipe over the nipple and clamp in place.

5) Slip a 1-1/4 inch pipe 2 feet in length over the 1-inch pipe. (This should slide up and down to obtain adjustable height.)



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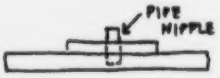

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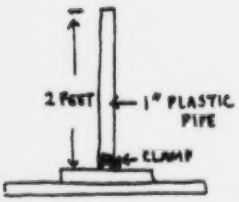

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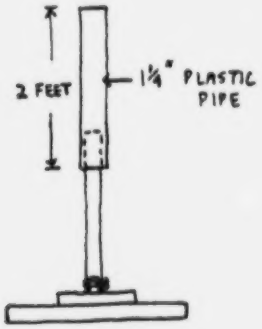

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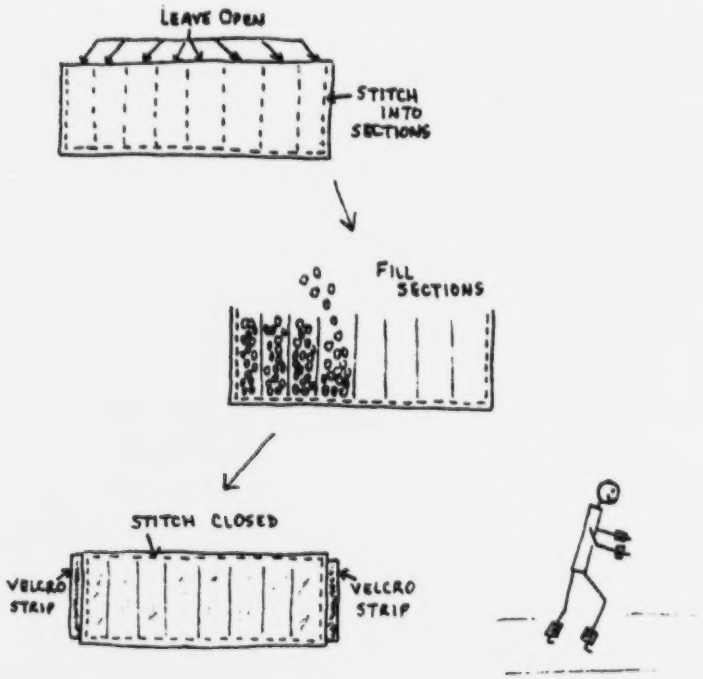
Wrist or Ankle Weights

a. Use: Facilitate strength development.

b. Construction:

1) Cut 2 pieces of strong fabric into the desired length and width.
2) Sew compartments along the length of the pieces.
3) Fill the compartments with desired weight of material (e.g., buck shot) and sew opening closed.
4) Sew a strip of velcro on either end.



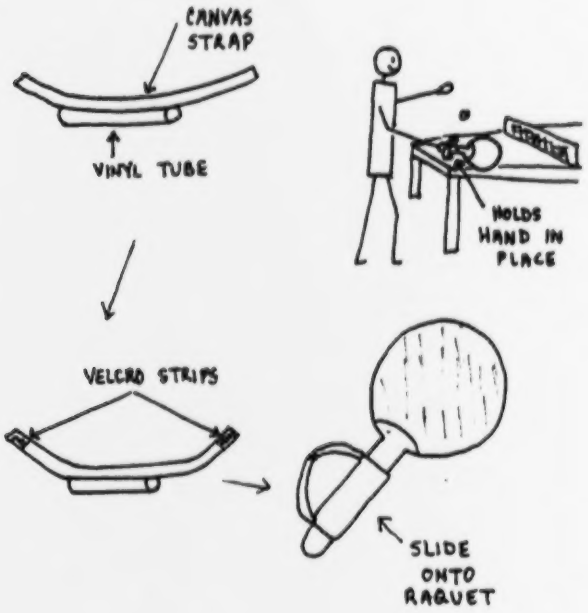
Grip-Aids for Racquets

a. Use: Assist individuals in holding on to a racquet.

b. Construction:

1) Sew a canvas strap onto a vinyl tube which fits the racquet handle.
2) Sew velcro on the ends of the canvas strap.
3) Slide the tube onto the racquet handle.

4) Strap handle in place.



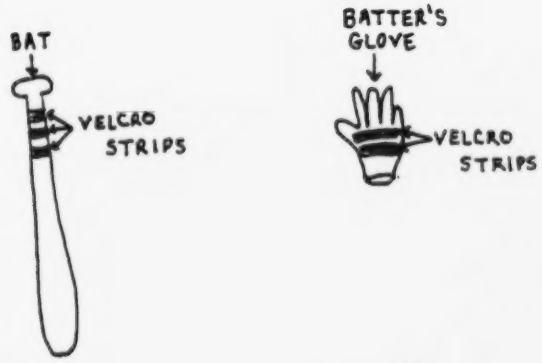
Grip-Aid for Bats

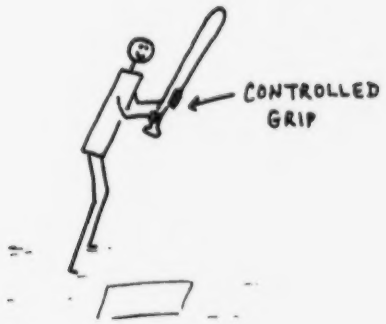
a. Use: Assist individuals in holding on to a bat.

b. Construction:

1) Glue velcro strips to the bat handle. Sew velcro strips to the insides of batting gloves.*

*An alternative is to sew velcro to a strip of elastic material; sew in a circle to fit snugly onto various bats.



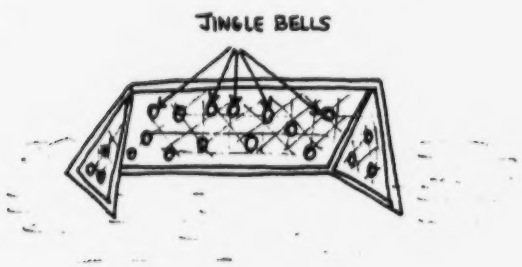


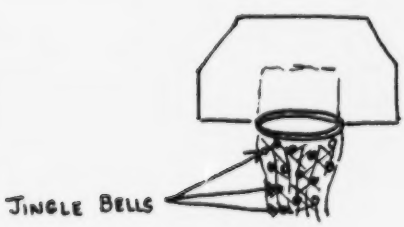
Audible Feedback Goals

a. Use: Provide feedback, especially to visually impaired, when a goal is made.

b. Construction:

1) Sew desired size of jingle bells to goal.





Weighted Stuffed Toys

a. Use: Facilitate development of strength with motivating stimuli.

b. Construction:

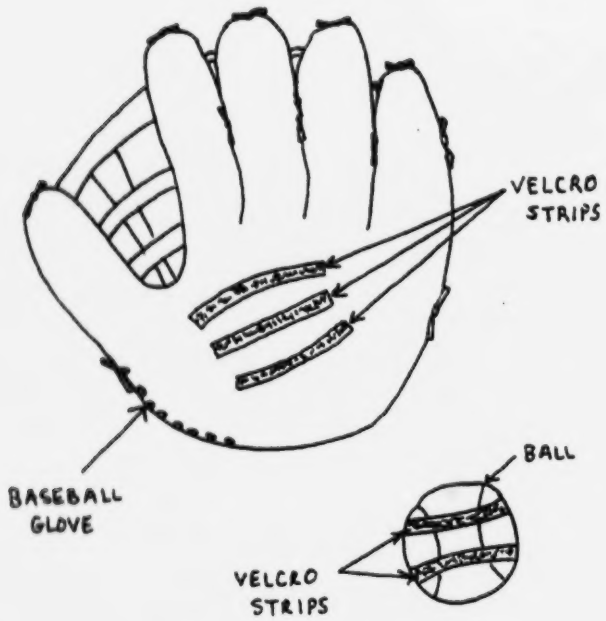
1) Replace some of the toy's original stuffing with a specified amount of weight.

Assisted Catch

a. Use: Facilitates development of catching, eye-hand coordination.

b. Construction:

1) Glue velcro strips to inside of baseball glove, and around outside of desired ball.



Guide Wire Grip Aid

a. Use: Provides visually impaired the ability to move along a guide wire with less friction.

b. Construction:

1) Cut hose or plastic pipe to desired length.

2) Slice the hose lengthwise.

3) Slip the hose over guide wire.

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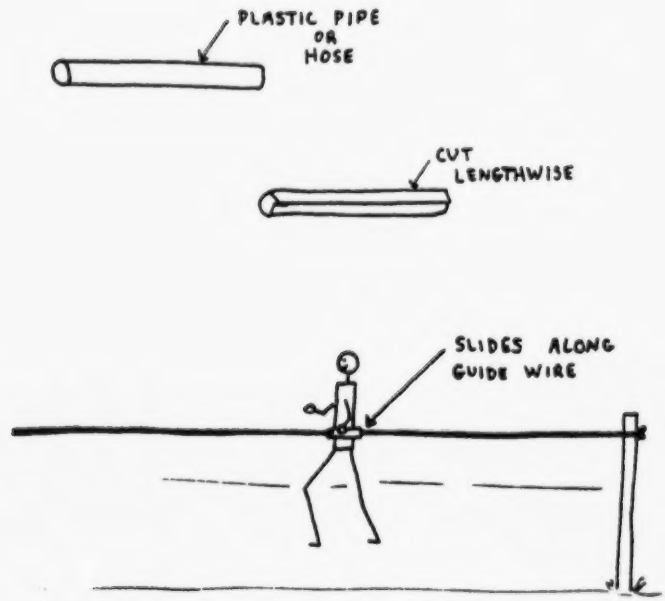

Purchased Equipment

Adaptive equipment is available from the following companies. This list represents only some of the major companies that offer a wide selection of quality equipment; there are other companies in the marketplace that are as helpful and reputable.

The basic guideline for purchasing equipment is to use common sense. Assess your students' and programs' needs before buying. This will prevent unnecessary expenditures from what are typically small budgets.

AMF Voit
3801 South Harbor Boulevard
Santa Ana, CA 92704

Constructive Playthings
1040 East 85th Street
Kansas City, MO 64131

Creative Playthings
Princeton, NJ 08540

Exerglide Playground Division
PO Box 1068, 12211 Walnut Street
Erie, PA 16512

Flaghouse, Inc.
18 West Street
New York, NY 10011

General Sportcraft Company
140 Woodbine Street
Bergenfield, NJ 07621

GSC Athletic Equipment
600 North Pacific Avenue
San Pedro, CA 90733

Jayfro Corporation
PO Box 400
Waterford, CT 06385

Nissen Corporation
930 27th Ave., SW
Cedar Rapids, IA 52406

Playskool Manufacturing Company
200 Fifth Avenue
New York, NY 10010

Shield Manufacturing, Inc.
9 Saint Paul Street
Buffalo, NY 14209

Wolverine Sports
745 State Circle
Ann Arbor, MI 48104

Resources for Adaptive Equipment

Further information on constructing or purchasing adaptive equipment can be found in the following resources:

Adventure playgrounds for handicapped children (1978). Contains ideas for designing playgrounds for disabled youth; diagrams, guidelines, and financing

strategies are presented. Order from: Handicapped Adventure Playground Association, Fulham Palace, Bishop's Avenue, London SWb BEA, England.

Hogan, P. (1974). Playgrounds for free. Strategies for developing playgrounds at minimal cost are presented; illustrations and descriptions are provided. Order from: MIT Press, 28 Carleton Street, Cambridge, MA 02142.

American Foundation for the Blind, Inc. Write for information concerning special equipment for the blind. Address: Aids and Appliance Division, 15 West 16th Street, New York, NY 10011.

Sasne, M. (1973). Handbook of adapted physical education equipment and its use. Descriptions of various equipment and suggestive usage. Order from: Charles C. Thomas, 2600 South First Street, Springfield, Illinois 62717

Werner, P. N., & Simmons, R. H. (1976). Inexpensive physical education equipment for children. Information is not directed toward the exceptional learner but can be applicable. Order from: Burgess Publishing Company, 7108 Ohms Lane, Minneapolis, MN 55435.

References

Chapter 4

Division of Special Education and Health and Physical Education Service, Department of Education (1977). Physical education for handicapped students. Richmond, VA: Author.

Fait, H. F., & Dunn, J. M. (1984). Special physical education: Adapted, individualized, developmental. Philadelphia: Saunders College Publishing.

Georgia Department of Education (1973). Every child a winner with improvised physical education equipment. Atlanta, GA: Author.

Masters, L. F., Mori, A. A., & Lange, E. K. (1983). Adapted physical education. Rockville, MD: Aspen Systems Corporation.

Musselwhite, C. R. (1986). Adaptive play for special needs children. San Diego, CA: College-Hill Press.

Appendix A

King of Phyz and the Trials of Prune

By

Scott Stuart

Virginia Tech

INFORMAL VIDEO-ASSESSMENT INSTRUMENT FOR INDIVIDUALS WITH LOW MOTOR ABILITY OR DEVELOPMENTAL LAG

Name _____ Age _____

School _____ Date _____

Teacher _____ Sex _____

MEDICAL INFORMATION _____

_____

_____

****

TEST CATEGORIES

MOTOR CONTROL (GROSS AND FINE)

LOCOMOTION
BALANCE (STATIC AND DYNAMIC)
EYE-HAND COORDINATION
EYE-FOOT COORDINATION

PHYSICAL FITNESS

SPEED
ENDURANCE
FLEXIBILITY

PERCEPTUAL MOTOR

DIRECTIONALITY
BODY AWARENESS
SPATIAL AWARENESS
VISUAL DISCRIMINATION
TACTILE DISCRIMINATION

TEST SCORING

\+ performs skill with ease
p present level of performance
o cannot perform skill

THE QUEST (MOTOR CONTROL)

SKILL	+, P, O	Time
Balance (Static and Dynamic)		
1. Assume squatting position.	____	____
2. Stand on one foot with assistance.	____	____
3. Maintain balance on one foot.	____	____
4. Stand on alternate foot.	____	____
5. Maintain balance on alternate foot.	____	____
6. Maintain balance on one foot, eyes occluded.	____	____
7. Stand on tiptoes.	____	____
8. Maintain balance on tiptoes, eyes occluded.	____	____
9. Squat on tiptoes, eyes occluded.	____	____
10. From lying position, stand and maintain balance.	____	____
11. Stand on tiptoes of one foot.	____	____
12. Walk line heel/toe.	____	____
13. Walk small balance beam with assistance.	____	____
14. Walk on balance beam stepping off only once.	____	____
15. Walk on balance beam.	____	____
16. Walk on balance beam, eyes facing ahead.	____	____
17. Walk on balance beam, stepping over obstacle.	____	____

Comments_____

SKILL	+, P, O	Time
Locomotion (Standing long jump and leaping)		
1. Standing long jump 3'.		
2. Leap varying distances 1' to 3'.		
3. Jump from 12" height with feet together.		

Comments_____

SKILL	+, P, O	Time
Eye hand (throwing and catching)		
1. Roll a 9" playground ball controlled sitting.		
2. Catch a 9" playground ball controlled sitting.		
3. Bounce a 9" playground ball (with accuracy).		
4. Catch a 9" playground ball from a bounce pass.		
5. Throw a 9' playground ball with accuracy.		
6. Catch a thrown 9" playground ball.		
7. Dribble a 9: playground ball with preferred. hand.		
8. Dribble a 9" playground ball with non preferred hand.		
9. Throw 9" playground ball through hoop from 5".		
10. Pass beanbag from hand to hand without dropping.		

11. Throw beanbag in air and catch with both hands. _____

12. Throw beanbag in air and catch with both hands. _____

13. Throw beanbag in air and catch with one hand. _____

14. Throw beanbag in air and catch with other hand. _____

15. Throw bean bag very high and still catch. _____

16. Throw beanbag for partner to catch. _____

17. Throw beanbag, overhand, so partner can catch. _____

18. Catch a beanbag from partner. _____

19. Throw beanbag from partner. _____

20. Throw beanbag through hoop from 5'. _____

21. Mature throwing pattern. _____

22. Throw softball, overhand, to be caught. _____

Comments_____

_____

SKILL	+, P, O	Time

Spatial awareness, physical fitness, jumping, hopping, directionality, locomotion. (Tumbling Mats)

1. Walk forward five steps and stop. _____
2. Walk backward five steps and stop. _____
3. Turn to right. _____
4. Walk sideways five steps and stop. _____
5. Return sideways and stop. _____
6. Jump ten times. _____
7. Hop on one foot five times. _____
8. Hop on other foot five times. _____
9. Walk backwards heel/toe. _____
10. Performs marching. _____
11. Bend at waist. _____
12. Perform exercise (Trunk-twist). _____
13. Perform large slow forward arm-circles. _____
14. Perform small fast forward arm-circles. _____
15. Perform bent knee sit-ups. _____
16. Perform log roll. _____
17. Perform large slow backward arm-circles. _____
18. Perform small fast backward arm-circles. _____
19. Jump backwards. _____
20. Perform 5 push ups. _____
21. Perform forward roll. _____
22. Perform backward roll. _____

Comments_____

SKILL	+, P, O	Time
Locomotor Skills		
1. Mature walking pattern.		
2. Mature running pattern.		
3. Hop on one foot.		
4. Jumps well.		
5. Skips well.		
6. Skips backwards.		
7. Gallops.		
8. Performs sliding without crossing feet.		
9. Performs marching.		
10. Performs leaping.		
11. Avoids obstacles while performing locomotor movements.		
12. Jumps rope.		

Comments_____

SKILL	+, P, O	Time
Striking skills (Eye-hand, eye-foot, eye-foot-hand)		
1. Strike whiffle ball with bat from tee.		
2. Strike pitched whiffle ball.		
3. Kick stationary playground ball.		
4. Kick stationary playground ball, with accuracy.		
5. Kick stationary playground ball with nonpreferred foot.		
6. Kick stationary playground ball moving towards it.		
7. Kick stationary playground ball, with accuracy, moving towards it.		
8. Kick stationary playground ball moving towards it with accuracy.		
9. Kick a playground ball moving towards him/her.		
10. Kick a playground ball moving towards him/her with accuracy.		
11. Kick a playground ball that is moving at an angle.		
12. Kick a playground ball that is moving at an angle with accuracy.		
13. Kick a playground ball that is moving away from him/her.		
14. Kick a playground ball that is moving away from him/her, with accuracy.		
15. Kick a playground ball through the air 10' with accuracy.		
16. Punt a playground ball.		

Comments_____

SKILL	+, P, O	Time
1. Can carry a glass of water without spilling.		

OBSERVATIONS (THE QUEST)

THE ENCOUNTER (PERCEPTUAL MOTOR)

SKILL	+, P, O	Time
Directionality		
1. Hide the beanbag in front of you.		
2. Hide the beanbag behind you.		
3. Hide the beanbag below you.		
4. Hide the beanbag above you.		
5. Hide the beanbag to one side.		
6. Hide the beanbag to the other side.		

Comments_____

SKILL	+, P, O	Time
Body Awareness and Visual Discrimination		
1. Points to head.		
2. Points to stomach.		
3. Points to arm.		
4. Points to leg.		
5. Points to nose.		
6. Points to eyes.		
7. Points to ears.		
8. Points to teeth.		
9. Points to hair.		
10. Points to jaw.		
11. Points to cheek.		
12. Points to lips.		
13. Points to chin.		
14. Points to forehead.		
15. Points to tongue.		
16. Points to neck.		
17. Points to toes.		
18. Points to feet.		
19. Points to ankles.		
20. Points to shoulder.		
21. Points to wrist.		
22. Points to fist.		
23. Points to knuckles.		

24. Points to fingers. _____

25. Points to calf. _____

26. Points to thigh. _____

27. Points to chest. _____

28. Points to waist. _____

29. Points to back. _____

30. Points to side. _____

31. Points to hips. _____

32. Points to knees. _____

33. Points to eyelids. _____

34. Points to toenails. _____

35. Points to hands. _____

36. Points to palms. _____

37. Points to fingernails. _____

38. Points to thumb. _____

39. Discerns primary colors (red, blue, yellow). _____

40. Discerns secondary colors (green, orange, purple). _____

41. Discerns black, brown, white, etc. _____

Comments_____

_____

SKILL	+, P, O	Time
Tactile Discrimination and midline		
1. Follow visually to midline.		
2. Follow visually 180 degrees.		
3. Eyes track an object 72" away.		
4. Sort rough, smooth, soft, hard, light and hard.		

Comments_____

SKILL	+, P, O	Time

Laterality

1. Raise one hand (mirroring). _____
2. Raise both hands (mirroring). _____
3. Raise one foot (mirroring). _____
4. Raise both feet (mirroring jump). _____
5. Raise left hand upon command. _____
6. Raise right hand upon command. _____
7. Raise right foot upon command. _____
8. Raise left foot upon command. _____
9. Touch right hand to left foot/to right foot. _____
10. Touch left hand to right foot/to left foot. _____
11. Use left hand to shake my left hand/right hand _____
12. Use right hand to shake my right hand/ left hand. _____
13. Step on my right foot with your left foot/ right foot. _____
14. Step on my left foot with your right foot/ left foot. _____

Comments_____

_____

SKILL	+, P, O	Time
Body Image and Fine Motor		
1. Sign name on chalkboard.		
2. Draw small square.		
3. Draw larger square.		
4. Draw line from small square to larger square.		
5. Trunk appears in figure.		

Comments_____

_____

OBSERVATIONS (THE ENCOUNTER)

_____

_____

_____

_____

FLIGHT TO SAFETY (PHYSICAL FITNESS, FLEXIBILITY)

SKILL	+, P, O	Time
Flexibility		
1. Stretching exercise.		
2. Toe touches.		
3. Hurdlers.		

Comments_____

_____

SKILL	YARDS
Speed and endurance	

1. Distance travelled in 15 seconds (sprint). _____
2. Distance travelled in 3:00 minutes. _____

Comments_____

OBSERVATION (FLIGHT TO SAFETY)

Appendix B

Obstacle Course Assessment

by

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On the following pages, an informal assessment is presented in the form of an obstacle course; it is intended for use with children suspected as having possible developmental lag or low motor ability. It was devised to assess informally the capabilities of individuals within the three components of psychomotor development: perceptual-motor, motor ability, and physical fitness. Several different aspects of each component were included in the course, however, many of the tasks are interrelated, for example, the gross motor skill of striking a ball includes perceptual ability and strength factors. For the purposes of this assessment, motor abilities will be broken into locomotor skills and manipulative skills; each of the major perceptual-motor tasks and physical fitness elements will also be specifically identified. Explanations and rationales will be presented for each area also.

Under the domain of perceptual-motor tasks; are the more precise labels of body awareness, visual discrimination, tactile discrimination, auditory discrimination, laterality, and directionality. Body awareness is an important feature of such an assessment because individuals, no matter what movement they are trying to execute, must do it in relation to their body in some way. Many of the games and/or learning situations that one becomes involved in, use the different body parts as points

of reference. This particular aspect is included in the obstacle course as a game of 'Simon Says' (46), in which the body parts are pointed to; a self-portrait (13) is also requested.

When considering visual discrimination, one must recognize the necessity to be able to sort large and small, long and short, colors, and positions in space. There are many times in the physical education class when a direction is given using the above terms, and/or components of them. It is also important for students to know these differences so that they can move their bodies, and any objects they may be dealing with, in the appropriate manner. Portions of the assessment which include these factors are finding a specific color hoop (9, 21), determining the positions of drawings (14), and identifying the proper sizes of various objects (47).

Tactile discrimination was included so that individuals could exhibit their ability to identify items according to the different textures of feeling they have. This is necessary, as are all perceptual-motor skills, because the more channels open to receive stimuli, the better the chance an individual has of comprehending it, and therefore, executing a given task. As part of the obstacle course, a box will contain items that are hard, soft, rough, smooth, heavy, and light; these will be sorted and identified (48).

Auditory discrimination is a vital aspect of education. If individuals cannot determine what sounds the instructor makes, they will have great difficulty in doing what has been asked. It is also important for the teacher to discover if the individual can discriminate loud noises from quiet ones; a student having difficulty in this area may have a hearing problem. As a part of the assessment presented here, students must identify the difference between loud and quiet noises (49).

Laterality, the ability to determine the left from the right, is important, especially in physical education, because everyone has a left side and a right side, and they are continually used as reference points. Individuals may have to complete a task in terms of their right and left side, or in relation to someone else's. Tasks included in the obstacle course will be to identify one's own left and right side and to associate these with another person's (59).

Directionality refers to terms which may be used to indicate a specific direction of action. If individuals do not have a solid understanding of these terms, it will be difficult for them to follow instructions given. They may have an ever greater disadvantage when corrective suggestions are given and they cannot comprehend what is being explained to them, or they perceive everything

differently than it was intended because of a lack of directional knowledge. Several items throughout the assessment include directional tasks: under (8, 37), in front of, behind, to the side, to the other side, above, below (19), over (38), and between (42).

When considering the motor ability domain, as pointed out earlier, the two broad categories will be locomotor and manipulative skills. Locomotor skills are a major component of physical education for the simple reason that individuals move throughout their life; movement is the essence of life. An individual must move to fulfill basic needs, to pursue interests, and for pure enjoyment of the environment around them. The person who has difficulty performing fundamental locomotor skills will face many unavoidable challenging situations. If the educator recognizes the locomotor deficit, the proper form can be enhanced, and success in many areas will be facilitated. Included under locomotor skills are: crawl (8, 37), walk forward (1), backward (27), and sideways (56, 57), run forward (9) and backward (44), jump (4, 21, 38), gallop (12), hop (54, 55), march (29), ski; (22), and leap (26).

Manipulative skills include those tasks which require the skillful handling of an object with some part of the body, or an extension of the body, for example, a bat. These are also basic tasks and lay the foundation for more

advanced involvement in activities for physical education, recreational enjoyment, and lifetime skills. In the obstacle course, rolling (10), throwing (11, 41), catching (40), kicking (31, 32), and striking (23, 24) the ball, and grasping (17), are the items representative of manipulative abilities.

In the area of physical fitness, an attempt was made to identify eight of the major components involved. These components are arm strength, flexibility, leg power, speed, balance, abdominal strength, cardiorespiratory endurance, and agility. It was determined that, even though each of these areas has a specific purpose within a physical education program, as a group they can all be easily identified, and with the proper training and instruction, can be improved. This will allow the individual a more successful chance in an activity and facilitate a healthy self-concept.

Arm strength is required in much of an individual's daily activity. If one does not possess enough arm strength, he/she will not be able to perform even the simplest task. This item was provided for in the obstacle course as the ability to pick up a chair (5), carry it (6), and place it up on a table (7); the number of pushups completed in sixty seconds was also included. Although lifting a chair is not an activity that individuals practice

daily, it adequately demonstrates the student's ability to use upper and lower arm muscles; it also provides an opportunity to determine the stronger, or weaker, arm.

The next component mentioned, is that of flexibility. Flexibility is the ability for body parts to proceed through normal ranges of motion; most activity will require a minimal degree of flexibility in order to facilitate comfort, proper execution of the task, and a reduction of injuries. In this assessment, concentration is placed on range of motion of the shoulder girdle (18), and hip flexors, lower back, and hamstrings (3). The rationale behind standing on the chair and bending down is that it will allow individuals to flex maximally, rather than stopping when they reach their feet or the floor.

Leg power is the combination of speed and strength, and is used in many locomotor and/or manipulative skills. In this assessment, however, the only measure which will strictly deal with leg power is the standing long jump (25).

Speed can be observed whenever an individual executes a rapid and successive movement. For the purposes of physical education, though, it is usually considered in reference to running, therefore, in this assessment it will be defined as the ability to travel as quickly as possible in a straight line. In the obstacle course, this component is presented as the fifty yard dash (60). This distance has been

previously used because it lessens the amount of reaction time involved, and does not take so much time that endurance factors come into effect.

The next component of physical fitness covered by this assessment is balance. This is the ability to maintain equilibrium even when faced with disruptive conditions. Both static (stationary) and dynamic (moving) balance factors have been considered in this assessment. Static balance tasks include standing on the toes (16), standing on one foot (50, 51), and repeating this with the eyes closed (52, 53). Dynamic factors are dealt with in hopping (54, 55), walking heel-toe in various directions (33, 34) and sideways (35, 36) on a line, and walking a balance beam (39). Balance, and some strength, are also included when the student is asked to stand up on the chair (2).

In the assessment of abdominal strength, the students are asked to do as many bent knee sit-ups as they can in sixty seconds (28). This ability will permit greater proficiency in other activities which require a minimum of strength, as well as encourage a healthier physique.

Cardiorespiratory endurance is the ability for an individual's heart and circulatory system to withstand physical exertion of the body for a prolonged period of time. This is very important in physical education, not only for the actual health of the heart, but because much of

the activity students are involved in demand this endurance. If students can participate for longer periods of time, they have more opportunities to learn, and to succeed. In the obstacle course, students are asked to jump rope for a minimum of six minutes (58); if the mechanics of jump roping have not developed, then running in place may be substituted.

The last component of physical fitness dealt with in this assessment is agility. This is the ability to change directions efficiently and quickly. This attribute will be very important in many of the activities which are involved in physical education, along with several life situations. In the obstacle course, agility is observed through the ability of individuals to run around a table as fast as they can (15); it can also be determined by their ability to run through a maze (43).

The log roll (20) and forward roll (45) are also included in the obstacle course, yet they have not been specifically identified in any of the areas mentioned. An individual performing both of these skills must possess some strength, locomotor ability, and balance; they are included in the obstacle course so that the evaluator can see the integration of each of these components.

Students will be directed through each station independently, except in a few instances where the

instructor may want to observe attention and retention skills. In this instance, a couple of different directions may be given at once; if this causes incorrect or inappropriate responses, then repeat the directions individually and let the student attempt the task again.

Once an individual has completed the entire obstacle course, the instructor will have quantitative and qualitative data on a majority of the psychomotor development skills. This information can be utilized in constructing behavioral objectives which, in turn, become criteria for the next stage of instruction.

Attached are the number coded instructions and actual obstacle course route, a pictorial design of the course, a list of the necessary equipment (modifications and/or substitutions are permitted within reason), an exemplary form for positional determination, and an evaluation form. Individuals administering the assessment are reminded that they should be completely familiar with all the tasks and their components, and have the entire course ready before the student to be tested arrives.

OBSTACLE COURSE - (NUMBER CODES)

1 walk to chair

2 stand up on chair

3 bend down as far as you can without bending your knees

4 jump off the chair

5 pick up the chair

6 carry the chair to the table

7 place the chair on top of the table

8 crawl under the table

9 run to the red hoop

10 roll the ball at the pins

11 throw the ball as far as you can (3 tries)

12 gallop back to the table

13 draw a picture of yourself

14 complete positional tasks

15 run around the table three times

16 stand on your toes as long as you can

17 pick up the piece of twine

18 shoulder rotation

19 place the string where instructed

20 log roll

21 jump five times in the blue hoop

22 skip to the t-ball stand

23 strike a stationary ball with the bat

24 strike a thrown ball with the bat

25 standing long jump (3 tries)

26 leap the puddles (hoops)

27 walk backward to the mat

28 bent knee sit-ups for sixty seconds

29 march around the mat

30 pushups for sixty seconds

31 kick a stationary ball

32 kick a rolling ball

33 walk heel-toe forward on a line

34 walk heel-toe backward on a line

35 walk sideways - right lead on line

36 walk sideways - left lead on line

37 crawl under electric fence

38 jump over electric fence

39 walk on bridge

40 catch the ball (3 tries)

41 throw the ball back to the instructor (3 tries)

42 walk between the curving path

43 run through the cone maze

44 run backward to the mat

45 forward roll

46 point to body parts (simon Says)

47 perform visual discrimination tasks

48 perform tactile discrimination tasks

49 perform auditory discrimination task

50 stand on one foot as long as you can

51 stand on the other foot as long as you can

52 stand on one foot with your eyes closed as long as you can

53 stand on the other foot with your eyes closed as long as you can

54 hop on one foot

55 hop on the other foot

56 walk sideways leading with the right side

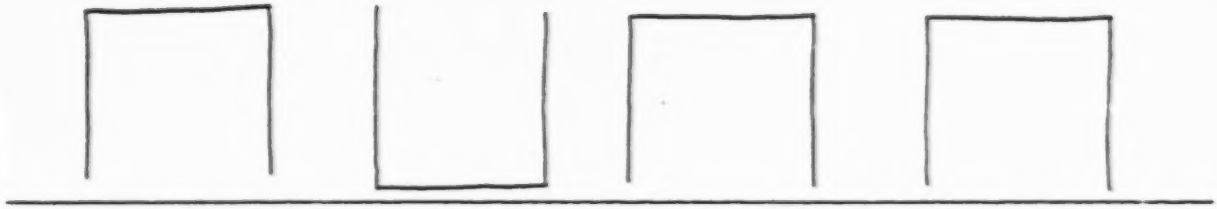
57 walk sideways leading with the left side

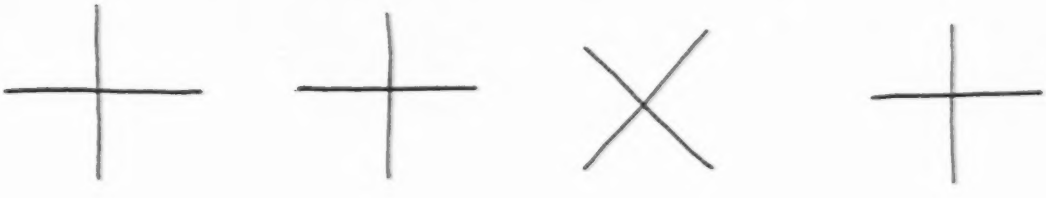
58 jump rope (run) for at least 6 minutes

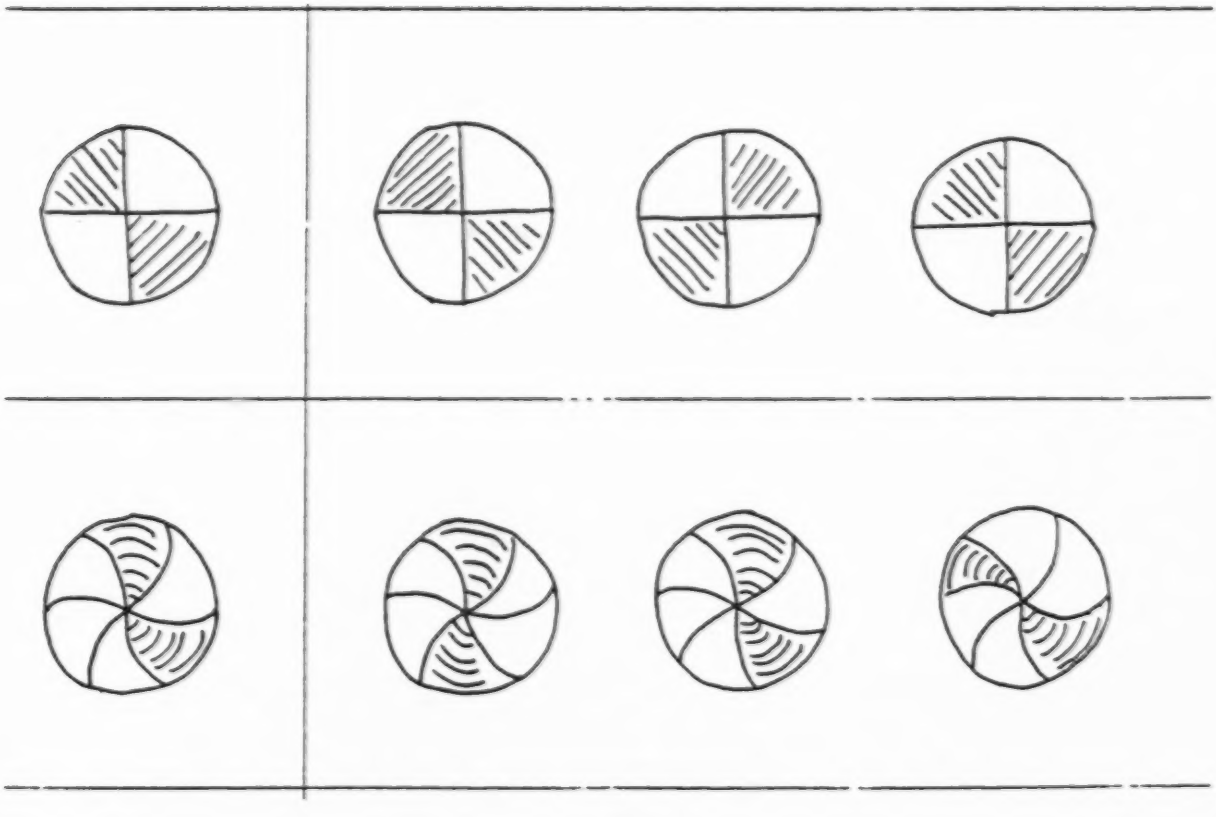
59 perform laterality tasks

60 run as fast as you can to the finish line (50 yard dash)

POSITIONAL DETERMINATION FORM







EQUIPMENT LIST

1 small chair

1 table

1 tape measure

7 hoops (only one red and one blue)

1 9" playground ball

10 bowling pins

3 softballs

a couple sheets of blank paper

2 pencils

1 positional determination form

1 two-foot piece of 1/2" twine

2 floor mats

1 t-ball stand

2 whiffle balls

1 roll masking tape

10 cones

2 poles (for electric fences)

1 low balance beam (2.5 meters long, 4 cm wide)

3 jump ropes (two for curved pathway - #42)

1 each: large and small object/long and short object

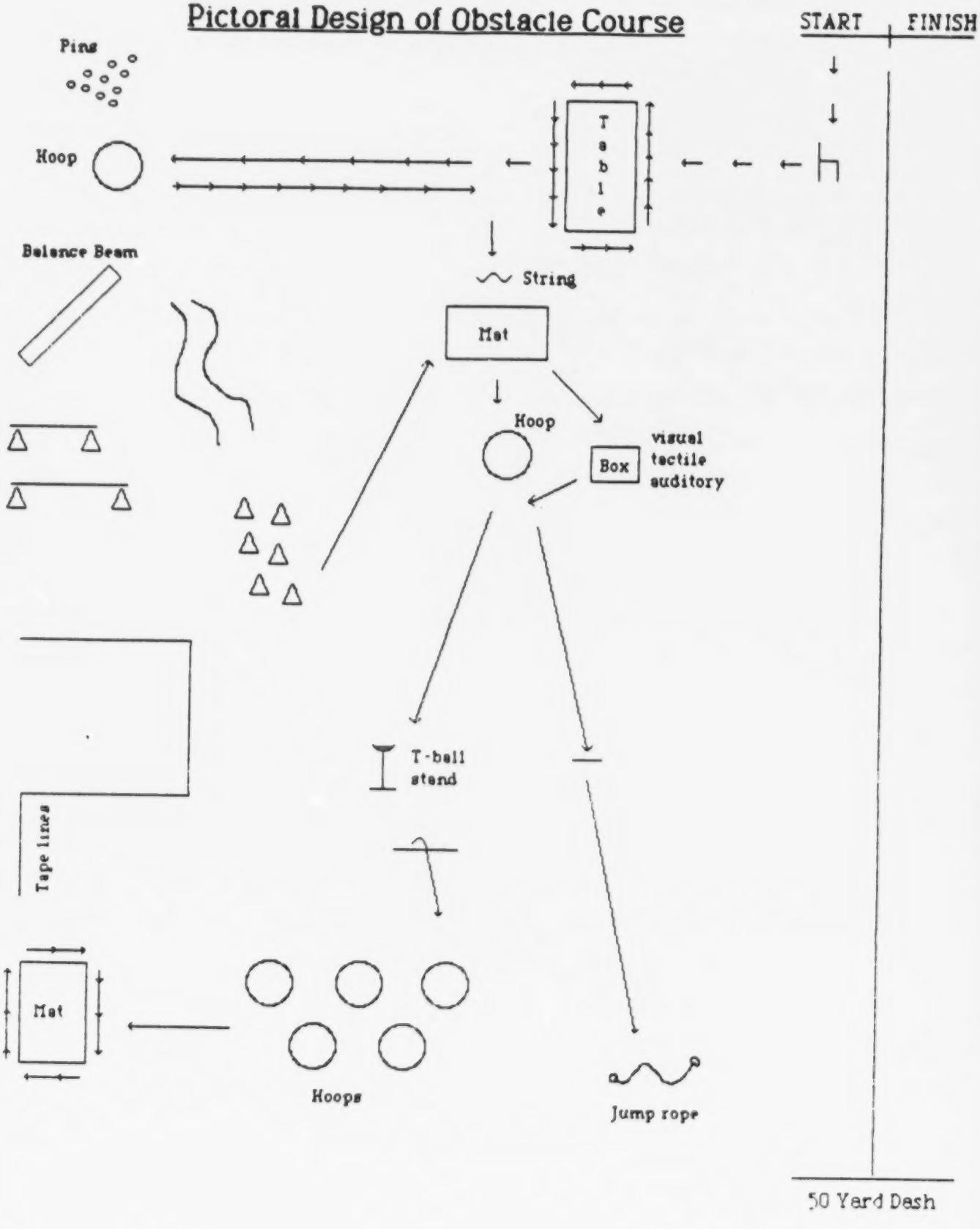
1 each: hard and soft object/rough and smooth object/heavy and light object

1 each: loud noised object and quiet noised object

1 stop watch

1 evaluation form

Pictoral Design of Obstacle Course



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EVALUATION FORM

Student Name _____ Date of Birth _____

Teacher Name _____ Date of Test _____

Indicate performance by + (accomplished easily), P (present level), o (cannot do), or when appropriate, indicate the number and/or time next to the item. In some areas ( ) actions should be described.

PERCEPTUAL-MOTOR

*Body Awareness

- stomach ____
- legs ____
- feet ____
- arms ____
- eyes ____
- ears ____
- nose ____
- mouth ____
- chin ____
- teeth ____
- hair ____
- elbows ____
- shoulders ____
- knees ____
- thigh ____
- ankle ____
- toes ____
- knuckles ____
- fingernails ____
- eyelids ____
- figure drawing _____

_____

*Visual Discrimination

- identifies red and blue ____
- determines positions in space ____
- distinguishes large and small, long and short ____

*Tactile Discrimination

- distinguishes hard and soft, rough and smooth, heavy and light ____

*Auditory Discrimination

- distinguishes loud and quiet ____

*Laterality

- mirrors left hand raised ____
- mirrors right hand raised ____
- mirrors right leg raised ____
- mirrors left leg raised ____
- raises right hand on request ____
- raises left hand on request ____
- raises right leg on request ____
- raises left leg on request ____
- touches right hand to left foot ____
- touches left hand to right foot ____
- touches instructor's right hand ____
- touches instructor's left hand ____
- touches instructor's left leg ____
- touches instructor's right leg ____

*Directionality

- places string in front ____
- places string behind ____
- places string to the side ____
- places string to the other side ____
- places string above ____

- places string below ____
- correctly interprets under ____
- correctly interprets over ____
- correctly interprets between ____

MOTOR ABILITY

*Locomotor Skills

- crawl ____
- walk forward ____
- walk backward ____
- walk - right side lead ____
- walk - left side lead ____
- run forward ____
- run backward ____
- jump ____
- gallop ____
- hop - right foot ____
- hop - left foot ____
- march ____
- skip ____
- leap ____

*Manipulative skills

- rolls ball ____
- throws accurately _____

_____

- distance throw _____

_____

- catches _____

_____

- kicks stationary ball ____
- kicks rolling ball ____
- strikes stationary ball ____
- strikes thrown ball ____
- grasps string ____

PHYSICAL FITNESS

*Arm Strength

- picks up chair ____
- carries chair approximately ten feet ____
- lifts chair onto table ____
- pushups in sixty seconds ____

*Flexibility

- length of twine needed at shoulder ____
- measurement from floor to fingertips ____

*Leg Power

-standing long jump ____

*Speed

- fifty yard dash ____

*Balance

- stands on toes ____
- stands on right foot (time) ____
- stands on left foot (time) ____
- stands on right foot - eyes closed (time) ____
- stands on left foot - eyes closed (time) ____

- hops on right foot ____

- hops on left foot ____

- walks heel-toe forward on line ____

- walks heel-toe backward on line ____

- walks right foot lead on line (sideways) ____

- walks left foot lead on line (sideways) ____

- walks balance beam (2.5 meters long, 4 cm wide) ____

- can stand on chair ____

*Abdominal strength

- bent knee sit-ups in sixty seconds ____

*Cardiorespiratory Endurance

- jumps rope (runs) 6 minutes _____

_____

*Agility

- circles table efficiently ____

- runs through maze efficiently ____

<u>COMBINED SKILLS</u>

_ log roll ____

- forward roll ____

Appendix C

Sample Individualized Education Program

INDIVIDUALIZED EDUCATION PROGRAM IN PHYSICAL EDUCATION

Pupil's Name: Angie
Age: 10

Date of Program: April 1, 1985
Teacher: Mary Smith

Medical Information

Down Syndrome

Present Levels of Performance

Skills:
A. Angie is able to walk on a small balance beam with assistance and can almost stand still on her toes placing her at approximately a 4-5 year old level according to the PLPA.
B. Angie can run fairly well and attempts to do a two foot jump; placing locomotor skills at a 2 year old level on the PLPA.
C. Angie makes an attempt to catch a 9" ball with her arms and body; this is a 4 year 6 month old skill on the PLPA.
D. Angie is able to kick a stationary ball and will attempt to kick a ball as she is moving toward it; a 3 year old skill on the PLPA.
E. Angie was able to point to her eyes, nose, and fingers upon request but did not point to any other body parts requested indicating ability may range anywhere from 1-5 years old on the PLPA.

Behavior: Angie did not want to participate in many of the activities and would not cooperate on several of the test items. When she was involved in something she wanted to do, she was very easy to work with.

Rationale for using test: Appropriate for age and detection of developmental lag or low motor ability.

Annual Goals

A. Increase balance
B. Increase locomotor skills
C. Improve eye-hand coordination
D. Improve eye-foot coordination
E. Improve body image awareness

Rationale for selection: Based on the present level of performance.

Short Term Objectives

A. Angie will be able to walk on a balance beam 4 cm wide and 2.5 meters long independently, losing her balance only 3 times.
B. Angie will be able to stand still on her toes for 1 full minute in 3 of 5 attempts.
C. Angie will demonstrate smoothness in running by easily adjusting to commands of start, stop, and turn in 3 of 5 attempts.
D. Angie will be able to jump, using two feet simultaneously in 3 of 5 attempts.

E. Angie will be able to catch a 9" ball using her arms and body in 5 of 7 attempts.
F. Angie will be able to kick a stationary ball while moving towards it from a distance of at least 3 feet on 3 of 5 attempts.
G. Angie will learn to identify her stomach, legs, feet, arms, ears, mouth, chin, teeth, hair, elbows, shoulders, knees, thighs, ankle, toes, knuckles, and eyelids, and be able to point to them when requested at least 3 times in 5 attempts.

Rationale for selection: Objectives are appropriate for Angie's present ability level.

Evaluation (Criteria, Procedures, Scheduling)

Criteria: Specified ratios of success based on annual goals and short term objectives.

Procedures: Use of A Present Level of Performance Assessment for Children with Developmental Lag or Low Motor Ability (PLPA), a beam 4 cm wide and 2.5 meters long, stop watch, a 9" playground ball, and a checklist of body parts to be learned.

Scheduling: Year-end check on attainment of all short term objectives.

Rationale for selection: These methods of evaluation will determine, on at least an annual basis, the appropriateness and attainment of set objectives.

Educational Services and Media/Duration of Services

Access to the district's Special Physical Education Consultant during the school year.

Rationale for selection: Supportive services are needed to determine what is available, accessible, and necessary for the student to experience success in the program.

Participation in Regular Program

A small group setting, with children of approxiamtely the same skill abilities, is recommended for the physical education program.

Rationale: As determined by Angie's abilities, she is capable of functioning within a small group setting and will benefit from the variety of activities that can be used in such a setting to achieve her set goals and objectives. Other students may also provide added motivation for Angie to participate in those areas where she prefers less involvement.

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